

AN EXPERIMENTAL STUDY
OF LANGUAGE LABORATORY
IN TEACHING HINDI PRONUNCIATION
TO NON-HINDI SPEAKING CHILDREN

BY
RENU KAPUR

UNDER THE SUPERVISION OF
DR. C. K. BASU

**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS (PSYCHOLOGY)**

**DEPARTMENT OF PSYCHOLOGY
UNIVERSITY OF DELHI
DELHI
1972**

CERTIFICATE

This is to certify that the dissertation entitled
"AN EXPERIMENTAL STUDY OF LANGUAGE LABORATORY IN TEACHING HINDI
PRONUNCIATION TO NON-HINDI SPEAKING CHILDREN", submitted for
the award of degree of Master of Arts in Psychology to the
University of Delhi, Delhi, is a faithful record of the bonafide
work carried out by Anu Kapur under my guidance and supervision.
No part of the dissertation has been submitted for any other
degree. All the assistance and help received during the course
of study has been fully acknowledged by her.

C. L. Dhillon
(C. L. Dhillon)
Reader,
Department of Psychology,
University of Delhi.

*This project report/Long essay may
be categorized under Educational Psychology*

C. L. Dhillon

PREFACE

Technological advances affect the way we live, work, play and communicate. Technological devices can be usefully employed in educational procedures. Language teaching, a major part of education, has been greatly influenced by the phenomenal growth of electronics in the late twentieth century.

Language Laboratory is one of the recent contributions of educational technology. Language laboratories have made their headway into all schemes of language teaching in the developed countries.

The present investigation is an attempt to find the extent to which language laboratory can be effective in teaching Hindi pronunciation to non-Hindi speaking children and the attitudes that students develop towards language laboratory method of teaching. This is one of the first empirical studies in this field carried out in India.

ACKNOWLEDGEMENTS

I am profoundly grateful to Prof. H. C. Ganguli, Head of the Department of Psychology, University of Delhi, Delhi, who very kindly approved the topic of this dissertation.

My grateful thanks are also due to my teachers, who have been kind and everhelping in giving me suitable guidance and encouragement. It would have been no easy a task without their cooperation to complete this piece of dissertation.

I am extremely thankful to Dr. C. K. Dasu, for his personal guidance at every stage of this project. His valuable suggestions have been highly illuminating and explanatory to me in the completion of this project.

I am highly thankful to Prof. J.V.C. Aiyar, Director, R.C.E.R.T., New Delhi, for permitting me to use the NIE language Laboratory and conduct experiments in connection with my dissertation and also for providing transport for the subjects and many other ancillary facilities.

I express my heartfelt gratitude and humble thanks to Mrs. C. Dasu, Incharge, NIE Language Laboratory, New Delhi, who has been kind enough to spare her valuable time and help me in the conduction of experiments and making valuable suggestions in writing this report. It was her personal endeavour and significant ideas, which provided so wonderful a guidance and

inspiration in completion of this report. She not only steered me out, but provided an insight in the subject of language teaching with the Language Laboratory system.

My sincere thanks are also due to:

1. Dr. A. N. Nayak, Principal, Sardar Patel Vidyalaya,
Lodi-Estate, New Delhi.
2. Mr. P. C. Guha, Principal, Misina Bengali Higher
Secondary School,
Hindir Marg, New Delhi.
3. Mr. V. Subramanyam, Principal, M.E.A. Higher Secondary
School, Laxmi-bai Nagar,
New Delhi.

I am grateful to the sixty adolescent subjects and their teachers, who came to the NIE Language Laboratory and participated in the experiments with full cooperation.

Thanks are also due to Mr. Kailash Tuli for helping me in the administration of the experiments and writing the report.

RENU LAFUR.

TABLE OF CONTENTS

	PREFACE	1
	ACKNOWLEDGEMENTS	11
CHAPTER ONE	INTRODUCTION	1
	The Language Problem in India	1
	The Importance of Hindi in National Development	2
	Distribution of Hindi Speakers in India	3
	Psychological Problems and Factors of Language Learning	5
	Strategies of Second Language Learning	8
	Importance of Correct Pronunciation in Language Learning	12
	Technological Approach to Language Learning	13
	The Need of Experiments with Language Laboratory	20
	Use of Language Laboratory for Teaching Pronunciation	25
CHAPTER TWO	REVIEW OF RELATED RESEARCH	26
	Research in India	26
	Research Abroad	36
CHAPTER THREE	OBJECTIVES OF THE STUDY	37
	Broad Objectives	37
	Specific Objectives	37

FOUR	DESIGN AND PROCEDURE OF THE EXPERIMENT	40
	Design of the Experiment	41
	Selection of the Subjects	43
	Selection of Lesson Tapes	45
	Construction of Criterion Test	46
	Construction of Attitude Questionnaire	46
	Selection of General Ability Test	47
	Selection of Examination Anxiety Test	48
	Orientation to LL and Instructions to the Subjects	48
	Administration of General Ability Test	50
	Administration of Pre-test	50
	Administration of Memory Span Test	51
	Experimental Teaching through LL Method	52
	Administration of Post-test	53
	Administration of Attitude Questionnaire	53
	Administration of 'Teacher's Attitude to LL Questionnaire' and 'Rating Sheet for Students'	54
	Administration of Examination Anxiety Test	54
	Analysis of Data	55
	Time Schedule of an Experiment	55
FIVE	ANALYSIS OF DATA	57
	Scoring Procedure	57

	Statistical Methods	59
	Results	61
THE SIX	SUMMARY, CONCLUSIONS, DISCUSSION, SUGGESTIONS	97
	Summary	97
	Conclusions	99
	Discussion	101
	Suggestions	102
	BIBLIOGRAPHY	105
	APPENDICES	

The Language Problem in India:

The importance of language as a potent instrument of thought and communication, as an effective means of human development and as a tool and product of human society cannot be exaggerated. Language learning plays a vital role in education. No system of education can be complete unless the study of languages receives proper emphasis in it.

In the context of language teaching in our schools, the following major developments took place in the post-independence period:

1. Mother tongue was acclaimed as the first language to be taught and as the medium of instruction at the primary, secondary and, in some cases at the university level (by stages).
2. Hindi was declared as the official language of the Union. Article 351 of the constitution states "It shall be the duty of the Union to promote the spread of the Hindi language, to develop it so that it may serve as a medium of expression of all the elements of the composite culture of India and to secure its enrichment by assimilating without interfering with its genius, the forms, the style and expression used in Hindustani and other languages of India"

3. English remained the medium of instruction in selected schools. Its study, however, as a compulsory language in the secondary schools continued in most of the states.

The modified three language formulae as recommended by the Education Commission (1965) runs thus - in the Hindi speaking states, the pupil will study Hindi under mother tongue, English under official language and other modern languages under A.I.L. or B.I.L. In non-Hindi speaking areas, the pupils will study mother or regional languages under mother tongue or regional language, English under official language and, Hindi or any other Indian language or European language under A.I.L. or B.I.L.

Importance of Hindi in National Development:

Hindi, in one form or another, is understood throughout North India and by a large section of the people in other parts of the country, especially big cities, centres of commerce and places of pilgrimage.

The study of Hindi in recent years has been receiving a lot of attention from the Governmental bodies. Voluntary Hindi organisations throughout India have also been promoting Hindi and several lakhs of students are learning this as a second language. Hindi is being taught in some schools as an elective subject and compulsory subject in some non-Hindi speaking areas. All this is being carried out only to propagate Hindi as a link or common language of India.

Gupta (1961) writes "with the country's increasing awareness of the importance of scientific approach towards the study of the various subjects including languages, it has been necessary to develop a scientific basis for the study of Hindi by the non-Hindi knowing people, specially those who are well versed in Hindi and any of the Modern Indian languages."

The importance of Hindi is accepted by all and more so, as it is spoken by the largest section of the Indian population.

Distribution of Hindi Speakers in India:

According to the latest linguistic survey of the country (Census of India 1961) there are 380 languages in India, which can be grouped into 14 major languages as given in Schedule VIII of Indian Constitution.

The following Census (1961) figures gives the distribution of population according to languages. It will be observed that Hindi occupies the first place. It is spoken by 13.34 crores of people i.e. 30.4% of the entire population. No other language enjoys such supremacy. Next in rank are Telugu, Bengali, Marathi & Tamil respectively.

TABLE 1**Distribution of Population according to Languages**

Sr.No.	Language	Population in lakhs	% of the total
1.	Hindi	1334	30.4
2.	Telugu	377	8.6
3.	Bengali	339	7.7
4.	Marathi	333	7.6
5.	Tamil	306	7.0
6.	Urdu	233	5.3
7.	Gujarati	203	4.6
8.	Kannada	174	4.0
9.	Malayalam	170	3.9
10.	Oriya	157	3.6
11.	Punjabi	110	2.5
12.	Assame	68	1.6
13.	Cashmere	19	0.4
14.	Sanskrit	3	0.0
15.	Other languages	<u>566</u>	<u>12.8</u>
		4389	100

Source: Census of India (1961) Languages tables (the figures are rounded upto lakhs)

Psychological Problems and Factors of Language Learning:

A language is a part of the culture of a people and the chief means by which the members of a society communicate. Differences in cultural meanings across languages are a problem in learning a second language.

There are a number of circumstances that will favour the process of learning the language. If these conditions are not present in the ordinary course of events, then one of the useful functions of the teacher, can be to arrange and/or provide the conditions that will render more bearable and speed up a process that would not otherwise take place.

Language development is influenced by certain factors. Lado (1964) mentioned the importance of some factors which are useful in language learning. The factors are as follows:

1. Human beings whether they are children or adults, learn more rapidly and effectively if they have a reason for doing so. Language learning is related to human motivation moderately and partly controlled by the will. To quote Lado (1964) "When a person understands the relevance of language learning to his long-range motives but has not the will to control his immediate pleasure seeking, outside forcing of his will results in increased learning and by diverting attention away from immediate pleasure seeking may result in continued learning practice from personal will." Halliday, McIntosh

& Stevens (1964) have also emphasised the importance of motivation.

2. Lado (1964) points out "If the expression, content and association are functionally the same in the native and the new languages, there is maximum facilitation If the units and patterns is not the same and will not function as the same in the new language, there will be interference."
3. Attention and awareness are important in language learning. When the learner does not succeed in learning the whole utterances by direct imitation, he splits it into small portions which enables the learner to focus attention on the trouble spots.
4. There are individual differences in the ability to learn a second language. Some learn more by memorizing connected sentences, others by analogy, still others by rules and systems. Lado (1964) says "Thus differences are related to different capacities which are the results of genetic potential plus total past experience."
5. Halliday, McIntosh, Stevens (1964) believe that the amount of the experience received by the learner is important, provided the experience is meaningful. Every fresh experience tends to reduce the recall time as learning occurs, for learning takes place in the form of decreased reaction time between the stimulus and overt speech.

6. Reinforcement of what has been learned should take place with as little delay as possible. Learning is more certain and rapid if lessons are frequent and hence there are correspondingly fewer opportunities for forgetting what has been learned so far.

There are many other related factors in language learning. According to Lado (1964), the student's age, educational level, capacity, handicaps, mental and physical deficiencies, stuttering etc., goals, linguistic and cultural background are significant variables.

The learner's ethnocentric tendencies and his attitudes towards the other group determine to some extent his success in learning a new language. Wardhaugh (1967) mentions "Personality variables are closely related to motivational ones: degree of inhibition, possible feeling of inadequacy, rivalry or threat, anomie, preferred sense use in learning, for example, visual rather than auditory and many other variables related to socio-cultural factors in the make up of individual students."

Greenson (1962) writes "Ability to learn a new language is perhaps determined, in part, by the early child-mother relationship; those who retain a profound oral incorporative interest may find the learning of a new language provides a suitable opportunity for such strivings."

Poor methods of teaching and backwardness in language learning in schools may account for anti-social behavior of many young delinquents. Krisby (1964) points out "The amount of language material presented by the unskillful teacher is so great, the making of mistakes so easy and the eradication of them so difficult that frustration, and a sense of helplessness may quickly set in. This may soon lead an unfortunate pupil to anti-social thought." This may create severe problems in learning.

Pimsleur, Mosberg & Morison (1962) group student factors in learning a new language under the heading - (1) intelligence, (2) verbal ability, (3) Pitch discrimination, (4) Order of language study and bilingualism, (5) Study habits (6) Motivation and attitudes and (7) personality factors.

Strategies of Second Language Learning:

The teaching of languages should be considered from both the practical and theoretical point of view. The practical point of view regards methods which will lead most directly to a competent command of the second language i.e. the ability to speak, to read and to write it. Theory also is to be considered and no methods of teaching a subject can have any place in language teaching unless they can prove to be educative. According to Kittson (1924) "The function of language teaching in education is to give what is called linguistic training"

The approach which has held sway for the last 30 years is the 'Grammar-translation method'. The 'Grammar-translation method' of language teaching, as the name implies, leans heavily upon the formal description of the language being taught and upon the exercise of translation into and out of the mother tongue. In this traditional approach the key to the acquisition of a second language skills is held to be the study of its grammar. Even though grammar has an important place in the total operation of language teaching, however well described and relevant it is, it would still not be an adequate substitute for the teaching of language skills. With greater interest in modern languages for communication the inadequacy of grammar-translation method became evident. Grammar is commonly presented to young, inexperienced and unsophisticated learners who are unable to transfer grammatical description into practical operation.

In the conventional pattern of second language teaching translation alternates with formal grammar as the main language activity, hence the linking of the two in the term grammar-translation method. Here, from the very beginning the learners are presented with sentences in the mother tongue and are required to be translated into the language the children are learning i.e. to replace them by sentences in the second language. This is difficult for the pupils.



According to Lado (1964) "translation can be defended as a valuable skill in itself, but not as a substitute for practising the language without recourse to translation, and the description of the grammar of a language has its value to the linguist and to the student, but not as a substitute for language use."

The grammar-translation method is being replaced by teaching procedures, all of which, concentrate on practical performance, especially in the spoken language in the early stages and many of which use electro-mechanical aids - gramophone, tape-recorder and language laboratory.

The Direct Method:

A dissatisfaction with prose writing, translation, excessive preoccupation with grammatical details gave rise to the Direct Method in the early decades of this century. This method emphasized language learning by direct contact with the second language in meaningful situations. The direct method in addition de-emphasized or eliminated translation and memorization of rules etc. The Direct Method overcame the two major faults of grammar translation method by substituting language contact for grammar recitation and language use for translation. According to Lado (1964) "The central idea of the direct method is the association of words and sentences with their meaning through demonstration, dramatization, pointing etc."

In adapting to different pupils and situations the Direct Method kept on changing. The Direct Method assumed that learning a second language is the same as learning the mother tongue. This is not always true, since the psychology of a second language learning differs from that of the first. In learning a second language, the habit pattern of the first language are already there and the second language is perceived through the habit channels of the native language. However, the Direct Method still remains the foundation of second language learning and various audio-visual aids make good the weakness of the Direct Method.

Linguistic Approach:

Scherrer and Wertheimer (1964) describe this method as: "The audio-lingual method is characterized by intense drills in speaking and listening through dialogues which are memorized and pattern drills which are thoroughly learned by the student."

The emphasis is on the imitation and memorization of basic conversational sentences as spoken by native speakers. Pattern practice is emphasised. Instead of encouraging free conversation at first, the teacher uses directed dialogues which employ the learned patterns. The second language being taught, is usually used in the classroom but mother tongue may be employed for clarification of meanings etc.

The widespread use of tape recorders and other audio-devices has brought the method to a high level of effectiveness. According to Lado (1964) the method and materials which today aspire to be upto date usually contain (1) basic conversational sentences for memorization, (2) structural notes to help the student perceive and produce the stream of speech and the sentence patterns of the second language, (3) pattern-practice exercises to establish the patterns as habits, (4) Laboratory materials for oral-aural practice out of class, (5) Opportunity for use of the language in communication rather than in translation.

Language learning is a complex function and no single method can solve all the problems of language learning. Often the language teacher may have to combine the various methods and media of teaching in order to achieve the best results from a group of students.

Importance of Correct Pronunciation in Language Learning:

To be able to communicate orally in a second language, it is absolutely essential to develop a good pronunciation of the language. Linguists have laid a great stress on the importance of learning good pronunciation, to such an extent, that accurate phonological learning is an essential aspect of contemporary language teaching methods. Nida (1957) gives an account of both amusing and tragic errors in communication

which can occur when critical phonological distinctions in foreign language is not observed.

All four factors in foreign language phonology, namely, discrimination, articulation, integration and automaticity are receiving due emphasis on language teaching.

Hindi is a phonetic language. The important thing to learn here is the exact and correct pronunciation of the Hindi phonemes. Since the same set of alphabets has acquired pronunciation peculiar to each of the Modern Indian Language; it is advisable to learn the exact phonetics of these in Hindi.

Technological Approach to Language Learning:

Technology affects the way we live, work, play and communicate. New devices can be usefully employed in educational procedures. Language teaching, a major part of education, has been greatly influenced by the electronic developments in the twentieth century. Language Laboratory and tape recorder are two examples of this development.

There can be no doubt that the personality of the teacher will always have a far more and lasting effect than any mechanical aid. Nevertheless, there are some modern aids which are so efficient and economic that they cannot be ignored.

The usefulness of the following aids in language teaching are well established.

Visual aids:

Pictures: provide a great deal of information at a glance, but their use for illustration of meaning can be misleading. The objects and people shown in the pictures have different functions and connotations in different cultures and experience in understanding pictures varies from culture to culture.

The Blackboard: is the most versatile visual aid. All language teaching methods make use of the blackboard.

Flash Cards: Properly designed flash cards can be very useful in the study and teaching of languages. The cards are presented to the students who try to pronounce the word (as indicated by phonemic symbols). The back of the card has the words in ordinary spelling as a check.

Charts: are specially useful for oral practice. Charts keep the attention of the whole class together on the same stimulus. Two types are especially effective: mimicry-memorization conversation charts and pattern - practice charts.

Film Strips: can be very effective when used along with tape recorders or for informal conversation with the help of the teacher.

Opaque Projector: The page of a book or sheet is reflected on a screen. The advantage is that material can be seen as it is. The difficulty with it is the need for a dark

room, and the change of one exhibit, to the next is slow and awkward.

Motion pictures: in theory atleast are the most powerful visual aids. High costs render them prohibitive.

Television: is becoming increasingly important in second language teaching. TV is not the answer to the shortage of teacher, but skillfully planned programmes can be a major part of the solution of this problem.

Audio-aids:

In order to learn a second language, with any amount of success, a pupil must hear the language spoken after and over a fairly lengthy period and the learner must understand and speak that language in situations within this personal experience.

The Record Player: is the oldest form of aural aid apparatus. The indispensable step in language learning is to distinguish between sounds, and then imitate them. The record player can be useful in playing material, prepared by experts and the repetition will be exact and faithful in every detail. A small section of a dialogue can be played several times, whilst the class listens attentively, the class repeating in chorus either after or with the record. Though relatively less expensive they are not suited to individual work in the class.

The Tape Recorder: Difference between record player and

tape recorder is, that the recordings can be made as well as replayed in the tape recorder. If handled carefully it is potentially the most useful teaching aid available to us today. The same tape can be used indefinitely, as well as permanent recordings can be made, varying from a few hours to a few minutes. The most obvious use of the tape recorder in the class room is to give the pupils the salutary lesson of hearing their own voices. Although tape recorder can be used for oral work, its best remedial function is with small groups. Outstanding progress can be made in the elimination of personal faults in pronunciation, intonation and rhythm. The teacher can make criticism as the lesson proceeds, his voice coming in as soon as he hears a mistake and the pupil repeats the word or phrase. The tape recorder can be used for dictation at all levels. It enables the teacher to bring foreign speech into the classroom, uttered by voices young and old, gay and grave, male and female. Because of the ease with which it can be stopped and made to repeat, always at the same speed and the same pitch, it simplifies the teacher's task in language teaching. When coupled with visual aids, it makes possible the audio-visual presentation of a language to the beginners.

The Language Laboratory (LL): The LL is a comparatively

recent addition to the aids available for the learning and teaching of modern languages. The greatest boon to second language teaching from modern technology is the LL, which has found an honourable place in the philosophy of education.

A LL is a separate and special room where students may practice speaking and listening with the aid of tape-recorder, earphones, microphone and/or other electronic or sound equipments chiefly an audio-lingual supplement to class-work. What constitutes a LL is a special room with necessary equipments set aside for practice by students.

Stack (1960) writes that the purpose of LL is to enable the student to hear programme material with utmost clarity and high fidelity. Rosmelle (1964) comments, "LL is a unique method of teaching languages." Scherer (1966) says, "LL is both an out of class practice room and a taped library geared to language course." Basu (1968) writes that LL is a fourth generation production of education media.

The hard case of a LL is the sophisticated arrangement of electronic devices. The soft case employs the concept of reinforcement in the form of knowledge of result.

According to Turner (1968) "A LL is an assemblage of tape-recorders connected to the teacher's desk - here called the 'Console' - in such a way that the teacher can send out a lesson from the recorder and have it copied automatically and simultaneously by all the individual recorders in the classroom." The Master track is under the control of the teacher, what is recorded on it can not be erased by the student. The other track is in most cases fully under the control of the student: he can record his responses, check them with the model or instruction on the master track, erase his own efforts and try again, until he achieves what he regards as perfection. The console enables the teacher to monitor the students' work and to intervene if, necessary to provide him with further guidance.

The laboratory is for practising the aural-oral skills. These skills are more especially applied to learning language material in the fields of pronunciation and grammar. Any materials and methods used for practising the oral skills in these fields, in the classroom are appropriate and can be adapted to the LL. Thus procedures such as listening to, identifying, distinguishing between, and copying sounds, stresses, tones and tone patterns in pronunciation practice and ear-training are possible. In

grammar the familiar drills of substitution, completion, prepared-conversation and the like, are appropriate. The laboratory can be used for asking and answering questions, informal oral testing, and more formal oral examination. The incentive teacher can find a use for the laboratory in practising out difficulties of any sort which have arisen in the classroom.

There are three basic kinds of LIs.

1. Listen-respond
2. Listen-respond (audio-active)
3. Listen-respond-record (or audio-active comparative)

Across this classification runs another, dependent upon the way in which the use of the equipment is organised: (A) individual use, (B) Group use, (C) Simultaneous use.

LL has its place in the earliest stages of language learning, as also in its most advanced stages, but never can it replace the teacher or take over the whole teaching burden. A language Laboratory need be considered an effective tool in the hand of a good language teacher.

Description of photographs of language laboratory: Below is given the description of the two sketch photographs of language laboratory, one of the console and other of the booth.

Photograph 1:

It gives a general layout for a laboratory of 32 positions. It could be seen that main control of the laboratory is console, from where the monitors supervise, the individual work of students. Attached to language laboratory usually there is an instrument room and recording room for the maintenance of laboratory and recording programs, respectively. However, the specific arrangements differ from system to system and according to the specific requirements and also depending upon the availability of the space and cost.

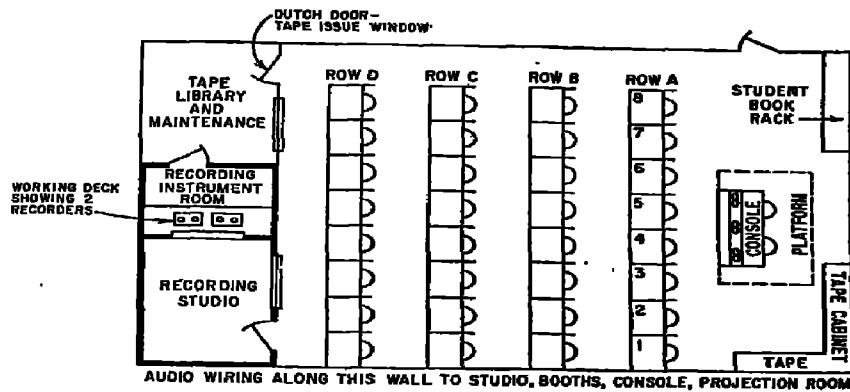
Photograph 2:

It gives a line design for a booth unit of two places in a language laboratory. In a booth student sits comfortably, without being disturbed by external noise. Some times acoustic tiles are used to separate the booths, but very often with modern laboratories there is some arrangement without the acoustic tiles. For that effective headphones are used to achieve the same objective. Whatever may be specific nature of the systems, the maintenance of laboratory is of utmost importance, without which much of the advantage of a laboratory will be ruined.

Source of sketch photographs:

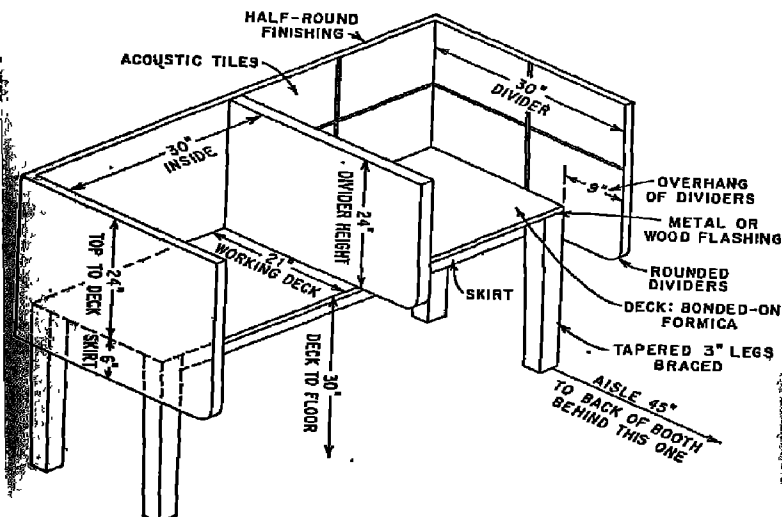
Stack, E.M., (1960). "The Language Laboratory and Modern Language Teaching", New York, Oxford University Press.

PHOTOGRAPH I



**Fig. 5: Suggested Arrangement for a Laboratory of 32 Positions.
Console at Back of Room.**

PHOTOGRAPH II



Lead for Experiments with LL:

LL holds special importance in the field of educational technology. It is a special type of teaching machine for teaching and learning of languages. The use of the LL is based on the notion that listening and speaking are the prime essentials in acquiring a second language. Hooking and Merchant (1955) describe the need for experiments with LL in these words: "Electronic equipment and appropriate techniques can accomplish what formerly was possible only by semi-tutorial instruction; a read comprehension of authentic foreign speech, good pronunciation habits, and an oral repertory of useful high-frequency foreign phrases and expressions, spoken naturally."

LL can greatly increase the speed of language learning. The LL can provide good models of the speech of the target language for imitation and manipulation by the student. This is of immense help to the teacher who is not a native speaker of the second language and lacks good native pronunciation. It also helps the native speaker to enable her pupils to hear a variety of voices of good speakers of the language being taught.

The laboratory permits audio-lingual practices outside of class. It can provide the opportunity for a regular programme of intensive oral practice. It enables pupils to

work at their own rate and at their own time and to some extent offers them the possibility of self-correction. It can enable the individual to get immediate help from the teacher, which is wanting in a classroom situation and conversely can allow the teacher to intervene instantly and correct mistakes made by the pupils. It can allow the whole class to work simultaneously at an oral exercise, as well as ensure a valuable degree of privacy and keep the confidence of nervous and self-conscious pupils. It can relieve the teacher of the tedious task of drilling of grammar and vocabulary.

One of the main advantages of the LL is that it enables pupils to work at individual speed, though the whole class is not under immediate supervision the teacher will know which pupil requires particular attention.

In the LL, the students can practise aloud simultaneously with his colleagues yet individually. The headphones give him a sense of seclusion, in which he need feel no inhibition through self-consciousness. Even the shyest can practise without any fear of ridicule. While working in isolation, he is not affected by the errors of his class-mates, and the teacher is free to focus his attention on the performance of anyone member of his class without interrupting the work or the other. The pupil can work on points which he most needs to practise. Thus LL can cater for difference in learning rates.

Turner (1968) states that there are several reasons for the effectiveness of LL. There is a natural respect for anything recorded which is not accorded to most teachers. Noises which come directly through earphones into the pupil ears can be more effective than noise which simply permeates the air of a classroom, where it mingles with other outside noises. Pupils hear their voices as they are not as distorted by the bone structure of the head. LL exposes its users much more effectively than any other method has done in bringing direct contact with the language being taught. The language lab. serves the same purpose in language teaching as the gymnasium serves in physical education.

According to Turner (1968) "Laboratory Language drills serve the same end as press-ups: in the end it is hoped to set up conditioned reflexes in the pupil's mind, so that similar stimuli whenever encountered will always elicit from them adequate responses in the foreign tongue."

Kirch (1963) states the following as the role of the LL-

1. It is a "tireless teacher." It provides endless repetition of recorded utterances with uniform quality of sound. It helps the student to repeat his linguistic behavior until it becomes a habit.
2. It makes programming with "minimal increments" possible.

- The steps the students are expected to take are so small that even the slowest student can hardly make a mistake.
3. It provides immediate correction and reinforcement, immediate reward.
 4. It presents the possibility for the student to proceed at his own rate of speed rather than in lockstep. Provisions can be made for a student who has been absent to make up some of the time lost by working with recordings.
 5. It permits the student to concentrate on the record material to the exclusion of the usual classroom distractions : other pupils, things going on out in the hall or out of the window.

The LL and audio-visual techniques can make the teaching of languages more successful, more rapid and more interesting than it is without them; moreover they carry no threat to the teacher. It is not true that LL can or should take the place of a teacher; nor is it a means by which pupils and teachers can achieve their aims without physical and mental effort. But it can make the teacher's work more effective and rewarding, especially, in areas where task is mechanical as in routine drills and practice. At the same time the teacher needs some special training if he is to make the most efficient use of audio-visual language courses.

The laboratory material is to be prepared by the teacher, which means a wasteful of effort as well as extra responsibility. But this will in the long run prove beneficial to the teaching profession.

The advanced students can use the lab. for extensive and intensive listening, practise in note taking in the second language, recombining exercises, oral proies, oral composition or role-playing in a dramatic or other performances.

There are a few limitation in the use of LLs. No LL can replace the teacher. Another is in the nature of even the best courses available. LL courses treat progress in learning a language as a series of discrete steps, whereas learning is a continuous process. To adjust the material to a student's needs for learning has been the function of the teacher monitoring at the console, just as it is a major part of the classroom teacher. Selfinstruction in the language laboratory is only possible with material which anticipates errors and provides interesting remedial material; and with equipment which provides quick and reliable access to a large quantity of varied material in the language. Another limitation is it's cost. Laboratory courses may become monotonous. However, it can be improved by introducing lessons of short durations and introducing pause, talks and music etc.

Inspite of the above mentioned limitation it can safely be

said that LL is a more motivating and involving medium of teaching.

Use of Language Laboratory for Teaching Pronunciation:

Audio-visual aids have introduced technology to education. LL is one of the versatile aids available for teaching of correct pronunciation. No experimental work has so far been done in teaching Hindi to Non-Hindi speaking children through LL. India is a multilingual country with Hindi spoken by the largest section of society. Thus the learning of correct pronunciation for people of different linguistic backgrounds can be facilitated by imitation of a native speaker for which a LL is the best device. For learning pronunciation, the voice of the speaker should be heard without distortion. The common defect of external noises and noises arising from the audience in the classroom are avoided in LL.

Research in India:

LL in India is a comparatively recent addition to educational technology. Due to their small number, very little work has been done so far to study their effectiveness.

According to an NCERT report (the earliest LL in India), the use of such laboratories in India is mainly by adults, rather than high school students. The services of this laboratory are also utilized for conducting programmes for teaching English to secondary school teachers and for teaching Hindi to non-Hindi speaking officers of various offices and ministries of Government of India. Some courses are also arranged for school students.

A study was conducted at NCERT Language Laboratory by Basu and Dave (1967) on a group of 26 teachers (17 females and 9 males). It included a sequence of 60 lessons on various aspects of teaching English, such as, pronunciation, structure and comprehension. Of these 40 were devoted to ear-training and production of English vowels, consonants, stress and rhythm, 10 lessons on grammatical patterns and 10 lessons on comprehension of vocabulary and structure. The total listening time was 26 hours excluding discussion. The course was spread over 14 days as it was not desirable to make the participants

work on the booth for more than 2 hours a day.

To study their level of performance a pre-test was administered to them. This test was followed by a series of 60 lessons on various aspects of the language. At the end the same test was given to the participants as post-test with a view to find out improvement, if any in their performance. The results were as shown in the table 2.

TABLE 2

PERCENT OF IMPROVED PERFORMANCE

Group	N	Pre-test		Post-test		Difference in Mean	Level of significance
		Mean	SD	Mean	SD		
Male	9	59.33	13.5	65.00	9.5	5.67	.05
Female	17	60.71	14.1	73.47	14.6	12.76	.01
Total	26	60.23	13.6	70.54	13.5	10.37	.01

The results show that there was a gain in the average performance of the whole group by more than 10% at the end of the course. The difference between the means of pre-test and post test is significant at .01 levels.

The first well controlled study was conducted by Tuli (1971). This study was to find out how far LI can be effective in teaching English pronunciation and what attitude students have toward learning English through this technological system. In this pilot study three major linguistic groups were taken for experi-

mental purposes. These were Tamilian, Bengali, Punjabi secondary school children, studying in non-English medium schools. A control group of English medium students was also taken (20 students, 10 boys and 10 girls) to find out the difference in achievement in English pronunciation as influenced by (a) LL method of instruction, (b) the linguistic background of the subjects & (c) the sex difference.

In the pre-test, ear-training test and production test items were included. Next was the administration of 4 lessons selected followed by a post test to find out the achievement of the subjects. An attitude questionnaire, general ability test was also administered. The total time taken for each of the experimental session was about three hours duration with a short rest pause.

The results showed that the difference between the groups is significant at .01 level. The effectiveness of the method was also found to be significant at .01 level. It showed that boys and girls of all four groups, showed some increase in post-test over pre-test and also some relation appeared between general ability score and improvement on criterion test. The study did not show any significant difference in the subjects due to sex differences. However, with regard to method there was significant improvement in all cases. In general it appeared from the analysis of attitude questionnaire that the subjects

reported to have favourable attitude towards LL method of learning.

Research Abroad:

According to MLA (1950) report - "A comparison of the value of a good language programme with a laboratory and one without has not been made because of the lack of objective standard tests of aural comprehension and oral production, for the secondary school level. However subjective evaluation seems to be overwhelming in favour of LL work when effectively planned. Students reactions are greater enthusiasm and a willingness to work harder."

Scherer and Wertherimer (1964) conducted an intensive evaluation of the comparative merits of audio-lingual (AL) and traditional (T) language instruction using beginning students of German. At the end of the 2 years of study, results showed - (1) the groups were equal in listening ability; (2) the AL group was far superior in speaking; (3) the groups were equal in reading; (4) the T group was superior in writing; (5) the groups were equal in German to English translation. The AL students, however, did report a more positive attitude than did the T students towards German and themselves while speaking German.

The Modern Language Journal (1962) reports a LL experiment in the Junior High School by Patricia Moore. A class of 16, the

top 3 homogeneously-grouped 7th grade French sections acted as the sample.

During the 6 weeks of the experiment, class continued meeting 3 times a week in 45 minutes sessions conducted in French before the laboratory session an individual oral aural test was administered. The exercises included (1) isolated number drill, (2) isolated grammar drill, (3) isolated verbal drill, (4) application exercises.

At the end of the six week period, all students were re-tested orally as well as a written test was re-administered. Results of oral test showed 50% improvement among experimental group, while 25% registered a greater number of errors and 25% scored as much as they had before. In the control group, no student demonstrated improvement, increasing in total errors and 50% remaining stationary. In written, 75% of experimental group showed improvement as again (50% of control group. All students showed improved pronunciation, comprehension, greater speaking accuracy, increased-speed, growth in self assurance enjoyment.

Encyclopaedia of Educational Research (4th Ed. P.874) quotes two studies on LL.

In one study Johnston (1957) found that "students at one school had ninety listening posts available in three class rooms. They found that the use of headsets made the study of

foreign language clear and the listening experience were more personal and increased attention. Dictation and comprehension exercises by a master voice automatically precluded a teacher's slowing up his speech and induced more accurate listening. The needed repetition and drilling of grammar patterns which would exhaust a teacher loaded with 5 to 6 classes daily, became possible."

Dryer (1955) writes "In one school, students in the seventh grade who came to the high school with no background of elementary school language spent extra time and effort in the laboratory and caught up with the slowest of the foreign language elementary school graduates. They did not attain as great fluency and confidence, as the good elementary school graduate, but they were not left behind."

Carroll (1963) writes in Handbook of Research on Teaching "Despite the fact the extensive foreign language courses on records and tapes are commercially available in ever increasing number no experimental analysis of the effectiveness of their use has ever been reported to my knowledge." However he reports following two studies.

A faculty group of Antioch College (1960) conducted a well controlled two years experiment comparing instructions organized in conventional way and with instructions organized around a LL. It was concluded that the teaching of students by the experimen-

tal procedure saved about 12 hours per week of the time of regular instructions without any consequent loss in quality of instructions. The new method (LL) also permitted more supervised instructions leaving more time for each student.

Neidt, Pickrel and Gibson (1958) made a carefully controlled study of benefits gained from the use of tape recording in junior high school Spanish classes. One (control) class was taught by a trained teacher of Spanish, who also prepared a series of tapes. The other four (experimental) classes were taught by regular classroom teachers without prior knowledge of training in Spanish who used tapes prepared by a Spanish teacher. The control group was found superior on written tests of Spanish. The experimenter concluded "the use of tape recording is an effective method of teaching conversational Spanish to seventh-grade students and that, 4 regular class room teachers who are untrained in Spanish can teach conversational Spanish effectively, when they base their teaching on tapes prepared by a Spanish specialist."

Enc. of Edu. Research (4th Ed. P.872) quotes "In a survey of the use of LLs in a substantial sample of public secondary school in the US, Bumpass (1963) reported that laboratory directors saw certain positive advantages in them particularly for the shy student, the slow learning student and the gifted student. One reported of successful use at the high school

level is by Lorge (1963), students had 60 minutes of laboratory work per week over a two year period. Experiments favouring the use of LLs at the college or adult level are those of Allen (1960), Bauer (1964) and Hanathy & Jordon (1964)."

Allen (1960) conducted an experiment on 54, French and Spanish pupils, divided into 2 groups of equal ability. Experimental group spent 20% of class time during year in laboratory. End of the year tests showed experimental group achieved higher scores in reading, vocabulary and grammar.

Bauer (1959) found that audio-aids bring a 20-30% increase in mechanism of expression, vocabulary and grammar and as much as 50% oral work.

Brushwood and Polmantier (1953) compared the performance of two years of freshman college students, one following traditional courses and one through LL (experimental group). Results published in the University of Missouri Bulletin state, "The experimental had greater tested aural achievement, than did the control groups."

Fotos (1955) "At Purdue, the student uses the LL, instead of the classroom. In comparison with the national average for 1 year French (56.7, one year, 68.2, two years), the Purdue average exceeds the national by over 10 points."

Gibson (1959) study conducted on LL, states that conclusions are affirmative for the use of laboratories in comprehension,

and writing of French. Results and benefits as well as limitations are discussed. He lists 8 points considering advantages of tape teaching.

Mueller and George (1956) at Wayne University found that effects of increased laboratory work include improved grades, higher reading comprehension, and total score on ACE, Co-operative French test, increased confidence and increased motivation for having study.

Young and Choquette (1965) among others, found that affective teaching of French pronunciation can be done through LL equipment even without "activated headphones" that allow the student to hear his own pronunciation. Hayes (1963) & Locke (1965) have stressed the desirability of high fidelity in the electronic systems of LLs.

Politzer (1960) concludes that owing to different student aptitudes, the LL is a necessity and can be effective as well.

Studies conducted by Delattre (1960), Dutton (1966), James & Massey (1966), Leaman (1963), regarding the LL have indicated its effectiveness.

Meiden and Murphy (1971) have, in a non-empirical study, described their experience in teaching French to English speaking students in the United States. With the objective of testing comprehension of the lesson and to build up conversational skills, they used three types of questions. The questions for

the laboratory exercises were worded in a way to compel the students to answer in a way that would correspond to the answers given by the voice on the tape. The simplest type of question were the Yes-No, Either-Or, followed by simple information questions based on the same subject matter. This kind of laboratory exercises were tried in intermediate classes that were reading a play, a novel, or a short story, and in beginning classes that were reading geographical and cultural materials. The classroom follow-up included asking questions in class exactly as they were presented on the tape and students answering in complete sentences. Then many of the same questions in indirect form i.e. as directed dialogue and further indirect questions on material covered in the reading lesson that had not been taken up on tape.

They found that with the right kind of tapes, the proper pupil preparation in the laboratory, and the subsequent follow-up in the classroom, the teacher can help his students achieve better comprehension and greater fluency in speaking the language.

Broad Objectives:

The general purpose of the present study is to study the effectiveness of a LL in teaching Hindi pronunciation to non-Hindi speaking children. The study aims to investigate the relationship between general ability, attitude and performance in learning Hindi pronunciation through a LL system. Another aim is to find the student's attitude towards teaching Hindi in a classroom situation and to study their attitude towards LL as a teaching machine. In this study two major linguistic groups were taken, for experimental purpose. These were:

1. Dravidian i.e. Tamil speaking children.
2. Indo-Aryan i.e. Bengali speaking children

For both the groups, Hindi is not first language but often learnt as a second or a third language.

Some of the personality variables like anxiety, seem to have a bearing on language learning. These variables were included in the investigation.

The attitude of the teachers towards LL system seems to be a very important variable in teaching languages through a technological media. This was to be studied.

Specific Objectives:

Keeping these broad objectives in mind the following

specific objectives were set for the present investigation:

1. To find the effectiveness of LL as a teaching machine in teaching Hindi pronunciation (ear-training and production) to secondary school students who are studying in the non-Hindi medium schools and whose mother tongue is other than Hindi.
2. To compare the achievements of the two linguistic groups (Tamil, Bengali) after the administration of language lessons through LL, i.e. to find out the group differences, if any.
3. To compare the sex difference in performance of subjects.
4. To find out the difference, if any, in the performance of Hindi medium school students with those of the non-Hindi medium schools students.
5. To find the relationship between general intelligence and achievement in Hindi pronunciation.
6. To find the relation between performance in Hindi pronunciation and the memory span of students.
7. To find the correlation between Examination Anxiety test scores and post test scores.
8. To find the correlation between pretest scores and post test score.
9. To find the correlation between eartraining score and production score of test lessons, in pre-test and post-test.

10. To find the attitude of the students with regard to teaching of Hindi language through LI and also to know their attitude towards Hindi as a second language.
11. To find the attitude of the teachers towards LI as a medium of language instruction.

The experimental design and procedure for data collection was drawn keeping the general and specific objectives of the study in mind. The various steps involved in the phase of the study are listed below:

1. Design of the Experiment.
2. Selection of the Subjects.
3. Selection of Lesson Tapes.
4. Construction of Criterion Test.
5. Construction of Attitude questionnaires.
6. Selection of General Ability Tests.
7. Selection of Examination Anxiety Test.
8. Orientation to LL and Instructions to the Subjects.
9. Administration of General Ability Test.
10. Administration of Pre-test.
11. Administration of Memory Span Test.
12. Experimental Teaching Through LL Method.
13. Administration of Post-test.
14. Administration of Attitude Questionnaire.
15. Administration of 'Teacher's Attitude to LL Questionnaire' and 'Rating Sheet for Students.'
16. Administration of Examination Anxiety Test.
17. Analysis of Data.

Design of the Experiment:

The learning of a second language can be affected by many factors, including - (1) age, (2) sex, (3) educational background, (4) linguistic background, (5) intelligence, (6) socio-economic and family background, (7) cultural background, (8) teaching methods, (9) motivation of the students, (10) attitude etc.

The objectives of the present experiment, however was to find out the differences in achievement in Hindi pronunciation as affected by (1) General ability, (2) sex differences, (3) linguistic back-ground of the subjects, (4) LL method of instruction, (5) attitude towards Hindi.

The following variables were chosen for the present study as independent and dependant variables.

Independent Variables:

Age, sex, linguistic background, general ability (as determined by Birkbeck test and memory span of students), educational back-ground, attitude and anxiety level were some of the independent variables.

Dependant Variables:

Dependant variables were post test scores on the criterion test of the LL lessons.

Intervening Variables:

Motivation of the subjects, and organizational set up may

be considered as the intervening variable for the experiment.

As this was a 'field study' the control or manipulation of the variables were made only as far as it was possible to do.

Controls:

All the subjects in the study were tenth class students in the age range of 14-16 years with more or less equal educational background. Number of subjects in each group was kept constant and the sex ratio was also controlled to some extent.

General ability test was administered to see if the groups differ significantly on scores obtained on Birkbeck test and memory span.

Examination anxiety test was administered to see whether differences in anxiety level affect achievement in test performance. Also teacher's rating of students on five point scale was taken to see, if the groups are homogeneous, in Hindi ability or not.

All the relevant variables were manipulated or controlled and it was hypothesized that the effectiveness of teaching Hindi (pronunciation) as a second language through the LL method would be comparatively more effective irrespective of linguistic background, sex, school background and intelligence of the participant subjects.

Selection of Subjects:

All subjects were drawn from 10th class of different schools. Two linguistic groups consisting of 20 students each were taken. In order to compare the achievement of boys and girls more or less equal number of each were included. A Hindi medium group consisting of 10 boys and 10 girls was taken to compare each linguistic group, who do not have Hindi as a medium of instruction.

Subjects were all in the age range of 14-16 years and nearly equal in the educational attainments. The students were selected in a random fashion by teachers concerned. The standards of the schools was nearly equal. Socio-economically also there was not a wide gap in the different schools.

Table 3 shows the distribution of subjects on teacher's rating sheet.

TABLE 3
DISTRIBUTION OF SUBJECTS ON TEACHER'S RATING SHEET
(B = Boys, G = Girls, T = Total)

Sr.No	Name of group	V.Good			Good			Av.			Poor			V. Poor		
		B	G	T	B	G	T	B	G	T	B	G	T	B	G	T
1.	Bengali	-	-	-	7	-	7	10	-	10	3	-	3	-	-	-
2.	Tamil	-	5	5	4	7	11	4	-	4	-	-	-	-	-	-
3.	Hindi	-	2	2	4	3	7	5	4	9	1	1	2	-	-	-
4.	Total	-	7	7	15	10	25	19	4	23	4	1	5	-	-	-

Bengali Subjects:

They were taken from Raisina Bengali Higher Secondary School, Mandir Marg, New Delhi. They all have Bengali as their native language, and use as a major language both at home and school. The students were from the science group of 10th class.

Tamil Subjects:

They were taken from M.E.A. Higher Secondary school, Laxmi Bai Nagar, New Delhi. Among the subjects were 12 girls and 8 boys. All have Tamil as native language, except one Marathi subject. The medium of instruction in the school is Tamil & English as well. They were from the arts groups of 10th Class.

Hindi Medium Subjects:

Hindi medium subjects were taken from Sardar Patel Vidyalaya, Lodi-Estate, New Delhi. It was a mixed groups of 2 Tamil, 4 Gujarati, 2 Marathi, 1 Hindi and 9 Punjabies. They all had studied Hindi throughout their schooling and used it mainly for speaking at home, school and writing letters.

TABLE 1DETAILS OF THE SAMPLE

Sr.No	Name of the Group	Number	Boys	Girls	Mean Age	Class	Group
1.	Bengali	20	20	-	14.9	10th	Science
2.	Tamil	20	8	12	14.9	10th	Arts
3.	Hindi Medium	20	10	10	15.0	10th	Arts & Home Sc.
Total		60	38	22	14.9		

For statistical analysis of the data, analysis of variance model, along with t-ratio and correlation was considered to be a suitable research design to apply.

Selection of lesson tapes:

The next step was the selection of lesson tapes, for use in LL. This selection was made from the scripts of lessons prepared by the Central Hindi Institute, (Government of India, Agra/New Delhi) and recorded in the LL unit of NCERT.

These lessons were selected with the help of a linguistic expert and in-charge of the NCERT LL. Six Hindi lessons on pronunciation selected were considered suitable for the type of subjects to be included in the study. The description of these tapes, used in the experiment is given in table 5.

TABLE 5

DESCRIPTION OF TAPES USED

Sr. No	Tape Number	Lesson Number	Time Limit
1.	1	1	8½ minutes
2.	4	4	7½ "
3.	5	5	8 "
4.	9	9	8 "
5.	10	10	12 "
6.	11	11	10 "

6666

(The full script of these lessons is given in the appendix)

Construction of the Criterion test:

A criterion test was constructed to evaluate the performance of the subjects. The test was used both as a pre-test and a post-test of the subjects, (a copy is given in the appendix). The test had two parts - ear training and production and was based on the content of the above mentioned lesson tapes. These two parts helped to assess the performance due to, (1) discrimination i.e. hearing the differences in phonemes which are not distinguished or used in one's native language and secondly due to articulation i.e. learning to make the motor movements adequate to proper production of the foreign phoneme. These two factors have been specially emphasised by Carroll (1963) in the learning of a foreign language phonology.

Construction of attitude questionnaire

Attitude is an important psychological variable effecting any learning. So it was considered worthwhile to study the significance of this factor in learning a second language.

An attitude questionnaire (copy attached in appendix - 'Introduction to Language Laboratory Programs') was constructed to measure the students attitude to LL. Effectiveness of this form of attitude scale for studying teaching efficiency have been studied among others, by Basu (1968) Tuli (1971) and Muraraka (1970). The first page of the questionnaire had provision for two data and questions regarding language spoken

at home, school and in correspondence etc. The questionnaire included ten bipolar statements (x and y). First two statements were regarding attitude to Hindi language and rest of the eight, were about the LL method of teaching. Subjects were required to put a cross (X) against each pair of statements, in one column, on a 5-point attitude scale, viz. agree with x, inclined to agree with x, No preference for x or y, inclined to agree with y, and agree with y.

For teachers an attitude questionnaire was similarly constructed, containing ten bipolar statements. They were also asked to give their comments about LL in a subjective manner, as well. A rating sheet was constructed for teachers to rate their students on a 5 point scale viz. very good, good, average, poor and very poor according to the students ability in Hindi.

Selection of General Ability Test:

In order to assess the general intelligence of the subjects, Birkbeck test 1 and Memory span test (the latter from Bhatia's battery of intelligence test) were selected. The Birkbeck test (copy attached in appendix) consisted of 25 problems. The time limit for the test was 10 minutes. Each problem contained 2 marks and the test was scored accordingly. The test on memory span (a sub-test in the Bhatia's Battery) for sounds consisted of Hindi alphabets from 2 to 8 in Number, which the subject was

to repeat in the same order. The test proceeded till failure was recorded. Under each head three alternatives sets of letters were given. If failure is recorded in all 3 alternatives a final failure was recorded and the test stopped. Scores depended on the number of alphabets in a series reproduced correctly.

The general ability of students was also assessed from teacher's rating.

Selection of Examination Anxiety Test:

The test constructed by Alpert and Haber (1960) - the Achievement Anxiety Test (AAT) which consists of two sets of items: a facilitating scale, which allows the student to report how anxiety improves his test performance, and a debilitating scale, which describes how anxiety interferes with the test performance. In all there were 19 items, 9 in the facilitating scale and 10 in the debilitating scale. The items were scored 1 and 0 for alternatives in favour, in the facilitating scale and debilitating scale respectively.

Anxiety is an important component affecting test performance and this test provided a good estimate of the same (a copy of the test is given in appendix).

Orientation to LL and Instructions to the S's

The experiment was conducted in a similar fashion for all the three groups. It is conducted in three sittings taking one

groups at a time. First of all was called the Bengali group, then Hindi medium and last of all the Tamil group.

Subjects of one group at a time were brought to LL. They were asked to take their seats in each booth. A brief orientation to the LL was given. Instructions regarding the use of headphones, and adjustment of volume knob etc were given with help of their teachers. It was made sure that all students had clearly understood the procedure and their role.

Instructions for each test were given separately. To begin with the following instructions were given:

Instructions:

"This is a LL in which students are taught languages in a special manner. It is a special type of classroom. The place where you are sitting is called a booth. In your booth there is a head set to which you can adjust on your ear (this was demonstrated practically to every student). On your booth, there is a knob marked volume. You can increase or decrease the voice, according to your need. It is like a radio volume knob. If you do not get the voice or if you want to ask any questions, you can raise your hand."

"Now regarding this programme. You will be given different types of test along with the Hindi lessons which will be given through the LL. First a test will be given consisting of two parts i.e. ear training and production. Then intensive drilling in Hindi pronunciation will be given for one hour. Again the first test will be given to see how much you have improved.

Listen carefully to all instructions and follow them likewise. The programme is very interesting, so please work co-operatively. Now you shall be first given a test in which you have to solve some interesting problems.

Administration of Birkbeck test for General ability:

Each subject was given a form of the test. Then the following instructions were given - "We want to find out how you solve problems quickly. Please look at the instructions at the top of the test. As I read loudly please follow me and then read it (the instructions from the test are read) you will be given 10 minutes to complete this test. If you are not sure of anyone item, do not waste time go to next one. If you finish early go through the answers already written. You will start when I say 'start' and stop when I say 'stop'. But before you start let me give one more example.

A B C D E x

Thus the start signal was given to the subjects. Time was taken with the help of a stopwatch. After 10 minutes they were asked to 'stop' and all forms were collected back.

Administration of the Pre-test:

- a) Ear-training test: Each subject was given a blank response sheet for ear-training test. They were asked to write their name and booth number on it. Subjects were asked to put on the head-sets, with the following instructions

delivered through console by the monitor.

"On this sheet of paper are five pairs of sentences. You will hear one of the sentences from the pair spoken by the master voice. Listen carefully. There is a small difference in each pair of sentences. Each sentence will be repeated three times. Mark (a) or (b) on the sheet, according to your judgement, for the sentence that you feel is spoken by the master voice."

At the end of the ear-training test, response sheets were collected and the production was given.

- b) Production Test: This section of the test was given to each student in turn by the examiner. One subject was called at a time, for the production test, and was asked to read the given slip for three times. Two experts in linguistics, worked as examiners. It took one minute on each subject to undergo this part of the test. Examiner heard the response of the student and marked it right, wrong or unclear accordingly.

As only two students were being examined at a time the memory span test was also conducted simultaneously.

Memory Span Test:

One student at a time was called to each of the two examiners and the test given with the following instructions "I will speak some Hindi letters. Listen attentively. Repeat it after I have finished. Listen."

The test was started with two sounds. This was merely to give practice to the subject. Each sound was read out clearly and test proceeded till failure in each case was recorded. Also reverse letter test for memory was given.

Experimental Teaching Through LL Method:

The six lessons selected for the purpose of intensive drilling were now administered. Subjects were instructed to listen to these lessons very carefully and were asked to do drilling giving responses, repeating whenever necessary.

Every lesson had four parts viz. words, paired words, recognition drills and transformation. For the first part students were instructed to repeat the words spoken by the master voice in the pause given. For the second, paired words were followed by a pause to allow the student to repeat both. For the third, they were required to respond by indicating orally whether a particular sound had been in the first or the second word in the pair. For the fourth part, the students were instructed to transform a particular sound system into one required by them.

While the lesson tapes were being played, monitor was listening the responses of the subjects one by one, from the console, by connecting the respective channels. They were checked and corrected whenever necessary.

In this way all the 6 lessons were completed in one hour's duration.

After the lessons were completed the subjects were given some refreshments. An informal and brief interview was taken with students to gather some information regarding their opinion, attitude general impression regarding the programme. Immediately after this the post test was administered.

Administration of Post-test:

The post-test was administered in the same way as the pre-test i.e. in two parts of ear training and production.

This was done to find out the achievement of the subjects after learning through the LL system.

Administration of Attitude Questionnaire:

After collecting the response sheets of post test, each subject was given a copy of the attitude questionnaire - "Introduction to Language Laboratory Questionnaire" (given in appendix).

Subjects were required to give their biodata on the first page. They also had to fill in the questions on the first page regarding their native language, language used at home, in school and in correspondence.

Then the following instructions were read out to them from the form "Read carefully through each pair of statement, one under x and one under y and see which one is closer to your views. When you have made up your mind, put a cross (X) between the statements in the column, which describes your views, like agree with x, or inclined to agree with x, or no preference for x or y, or inclined to agree with or agree with y. You have to put only one cross (X) in between each pair of statements."

An example was also taken from everyday life to make the whole thing clear.

"Read each statement carefully, one under x and one under y, and see which one is closer to your views."

Subjects were given sufficient time to complete the questionnaire (about 10-15 minutes). When every one had finished, the papers were collected back and Examination Anxiety Test forms were distributed.

Administration of 'Teachers Attitude to Language Laboratory Questionnaire' and 'Rating Sheet for Students':

While students were filling up the attitude questionnaire, the teacher accompanying them was also given an attitude questionnaire and rating sheet to fill up. (Copy of both given in Appendix).

Administration of Examination Anxiety Test:

Next, all the students were given a copy of the Examination Anxiety Test in a group situation. The questions in the form were presented in both English and Hindi, but subjects were required to fill only the English ones. On the first page they filled up their name, age, sex, school, class, medium etc.

Then the instructions were read out from the form (given in the appendix).

The experimenter went around to see that all students had followed the instructions and care was taken to see that all students had answered all questions in the form. Wherever the students were unable to follow the questions, the same was explained to them. In this way when all students had finished

answering, the forms were collected.

After a word of thanks to the students, the students were sent back their school.

Teacher's incharge of their Hindi classes were sent 'a rating sheet for students.' They were asked to give rating to their pupils on a five point scale viz. very good, good, average, poor, very poor, regarding their performance in Hindi. The class teacher was sent another (similar) rating sheet to rate his students regarding their general achievement in class.

Analysis of Data:

Statistical Analysis, along with quantitative and qualitative results are given in the next chapter.

Time Schedule of the Experiment:

The whole procedure of data collection took three to three and a half hours for each group. Each group was called separately to the LL. The experiment was conducted on all groups in the afternoon. To illustrate the typical time schedule, the time schedule for the Bengali group is given below:

- | | |
|------------------------------------|------------------|
| 1. Arrival | 1105 hrs. |
| 2. Orientation to LL | 1105 - 1110 hrs. |
| 3. Introduction to Birkbeck Test | 1110 - 1115 " |
| 4. Administration of Birkbeck Test | 1115 - 1125 " |
| 5. Pre-Test: | |
| a) Ear-training | 1125 - 1130 " |

b) Production	1130 - 1210 hrs.
6. Memory Span Test	" " " "
7. Administration of six taped lessons	1213 - 1306 "
8. Rest pause (refreshments)	1308 - 1318 "
9. Post-Test	
a) Re-training	1320 - 1323 "
b) Production	1324 - 1342 "
10. Administration of Attitude questionnaire	1345 - 1405 "
11. Administration of Examination Anxiety Test	1405 - 1415 "
12. Departure from LL	1420 hrs.

It took about three hours for the whole experiment. The same schedule was more or less followed for all the experimental groups.

A brief discussion of the scoring procedure, statistical methods used for analysis of data and results are presented in this chapter.

Scoring Procedure:

Scoring of general ability tests (Birkbeck test and Memory span test) criterion test, attitude questionnaire, Examination Anxiety test was done as follows:

General Ability Test:

- a) Birkbeck Test: scoring was done in accordance with instructions in the manual of the test. Every correct problem contained two marks each. The total score for each subject were in this manner calculated.
- b) Memory Span: The scoring was done in accordance with the instructions in the Bhatia's manual for memory span.
Direct: one mark each for the number of sounds in the maximum correct reproduction (MPB-9) Reverse: One mark each for the number of sounds in the maximum correct reversed reproduction (MPB-6).

Criterion Test:

To find the effectiveness of LL programme, pre and post test was given. This criterion test was scored as follows:

- a) Ear Training: The subjects was asked to discriminate between

two sounds in the pair of sentences and to mark 'a' or 'b' according to his/her judgement. There were five pairs of sentences in this test and each was repeated three times.

The right and wrong responses of each student were counted from the response sheet. Their score was calculated by subtracting wrong from right.

- b) Production: In this part of the test, each student had to read a set of 5 sentences before a judge, who judged the sound as right, wrong or unclear, then number of right minus wrong responses was calculated and multiplied by two. Unclear sounds were not taken into account.

Then to obtain the total score for each subject his score on eartraining and production were added.

The maximum possible score in eartraining was five and in production - ten. Total (MPS) = 15.

Attitude Questionnaire:

In this were 10 bipolar statements (x and y) and subjects gave their forced choice on a 5-point scale. The number of responses for each statement, for the five point was counted separately for boys and girls and then total was found out for each linguistic group separately.

Then the percentage of responses were calculated for the following three categories:

1. For the total number of subjects ($N = 60$).

2. For boys and girls of all the groups, showing sex differences in attitude to LL (Number of boys = 38, Girls = 22).
3. For each linguistic group (N = 20 in each group).

In the same way teacher's attitude to LL questionnaire was scored and percentages were calculated from the response of all (N = 3) teachers.

Examination Anxiety Test:

Each item in the test was scored, 1 and 0, for responses in favour of facilitating and debilitating scale respectively. Total score of all subjects was thus obtained.

Statistical Methods:

The following statistical treatment was applied in the analysis of the data:

1. Two way analysis of variance was applied to find out the effectiveness of the teaching method for all the three groups taken together.
2. To find the ideal gain percentage, of the groups, first the maximum possible increase was found out. Then actual increase was calculated. To get the ideal percentage gain, actual increase was divided by maximum possible increase and multiplied by 100.
3. In order to measure the effectiveness of method in each subgroup, a t-test was applied to pre and post - test scores.

4. Ideal gain percentage and t-ratio was calculated to find to find out the sex differences in each group.
5. Two way analysis of variance was applied to compare the achievement of the experimental groups (Bengali and Tamil) with the control group (Hindi medium group).
6. In order to know the relation in subjects general ability and criterion score, correlations were calculated for each group, for pre-test scores and Birkbeck Test, pre-test scores and memory span, post-test scores and Birkbeck test score, post-test scores and memory span.
7. To find the relation between anxiety and test performance correlations between anxiety test scores and post tests of each group were obtained separately.
8. To find out the difference in performance due to anxiety among boys and girls i.e. sex differences, correlation between post-test scores and anxiety test scores of boys and girls separately in each group were calculated.
9. In order to know how far pre-test can be reliable in predicting post-test, correlation was found between pre-test score and post-test, score for each group.
10. In order to find the relation between sound discrimination ability and articulation, correlation between ear-training and production in both pre and post-test were calculated.
11. To find out the attitude of students towards LL method and Hindi, percentage distribution in the attitude questionnaire

to LL' was found out, for all subjects, for each group and for boys vs girls.

12. To find out the teachers attitude to LL, percentage distribution of 'Teachers attitude questionnaire to LL' was obtained.

All the statistical formulas used for calculations are given in the Appendix.

RESULTS:

After carrying out the above mentioned statistical treatment, the following results were obtained:

Effectiveness of the teaching method for the three groups and group differences:

Analysis of variance was applied on the pre-test and post test of all the 3 groups taken together to obtain these results. The effectiveness of the method is also shown by the ideal gain percentage of post test over pre-test. t-value were calculated to show the effectiveness in each group. The results are shown in the table 6 to 10.

The method of LL seems to be effective in improving ear-training and production skill of the subjects of three groups as a whole. The means and SDs on the pre and post test of three groups are shown in Table 6.

TABLE 6

Mean Scores and SD's of Pre and Post-test of each Group
(N = 20 in each group)

Group		PRE			POST		
		Err. tr.	Prod.	Total	Err. tr.	Prod.	Total
		A	B	(A + B)	A	B	(A + B)
U.P.S.		5	10	15	5	10	15
Bengali	(Mean	3.95	6.4	10.35	4.75	8.8	13.6
	(S.D.	1.59	2.8	3.45	0.92	1.83	2.01
Tamil	(Mean	3.35	3.6	6.95	4.1	5.1	9.2
	(S.D.	1.62	3.07	3.5	1.17	3.31	2.97
Hindi Med.	(Mean	4.3	6.7	11.0	4.6	7.8	12.4
	(S.D.	1.14	2.91	3.9	0.8	2.35	2.55

A graphical presentation of the data is given in Diagram A.

TABLE 7

Analysis of Variance Effectiveness of the Teaching Method
on the Three Group

(Performance of three groups on Pre & Post-test)

N = 20 in each group

Source of Variation	df.	S.S's	M.S.	F.	P.
Between trials (pre & post)	1	95.4	95.4	13.28	.01
Between Subjects	59	525.83	8.9	1.24	N.S.
Inter action	59	424.09	7.18		
Total	119	1045.32			

SCORE ON CRITERION TEST.

2 3 4 5 6 7 8 9

PRE AND POST TEST

PRE	[-----] TRAINING [-----] PRODUCTION [-----] EAR TRAINING [-----] PRODUCTION
POST	
TEST	

The analysis of variance on the pre and post test of the three groups shows that the difference in the performance between pre-test and post-test for the three groups as a whole is statistically significant at .01 level, whereas among subjects the difference is not significant. This shows that the effectiveness of the teaching method is highly significant.

Percentage improvement on the post-test scores over the pre-test scores (Ideal gain percentage):

The 'Ideal gain percentage' was calculated in order to measure the effectiveness of the LL method of teaching Hindi pronunciation in terms of percentage gain. It gives an estimate in terms of comparative percentage improvement on the second test over the first test.

This method of calculating learning gain has been recommended amongst others, by Ameych (1967) and Basu (1968).

This method was considered suitable to apply for assessing the improvement of the groups, as there were lot of individual differences.

The pre-test and post-test taken by the students before and after the course, were first tabulated and then the 'Ideal gain percentage' was calculated.

The results in table of ideal gain percentage shows that an immediate post-test the LL method gives significant indication of the effectiveness of the LL method in terms of percentage of learning improvement.

TABLE 8

Percentage Improvement on the Post-test over
the Pre-test (Ideal Gain Percentage)

Group	Sex	Mean Pre- test Score	Mean Post- test Score	Mean Increase	Max. Possible Increase	Ideal Gain%
Tamil	G	8.58	9.83	1.25	6.42	19.5
	B	4.5	8.13	3.63	10.5	34.6
	W	6.95	9.2	2.25	8.05	23.5
Bengali	(B)	10.35	13.6	3.25	4.65	69.9
Hindi Med.	G	11.0	11.8	0.8	4.0	20.0
	B	11.0	13.0	2.0	4.0	50.0
	W	11.0	12.4	1.4	4.0	35.0
Total	G (N = 22)	9.68	10.72	1.04	5.32	19.54
	B (N = 38)	9.28	12.29	3.01	5.72	52.6
	W (N = 60)	9.43	11.88	2.45	5.57	43.9

A graphical presentation of the data is given in Diagram B.

The Tamil group has shown to have the least improvement, 23.5% as against the Bengali group which gained 69.9% by this method.

On the whole the girls improved only by 19.54% where as the boys gained by 52.6%. On the whole a gain of 43.9% is found.

MEASUREMENT #

IDEAL GAIN PERCENTAGE OF

POST-TEST OVER PRE-TEST.

IDEAL GAIN %

V TAGE

%

70

60

50

Comparison of the Sub-groups:

Table 9 gives the mean and SD's in pre-post and general ability tests in each group.

TABLE 9

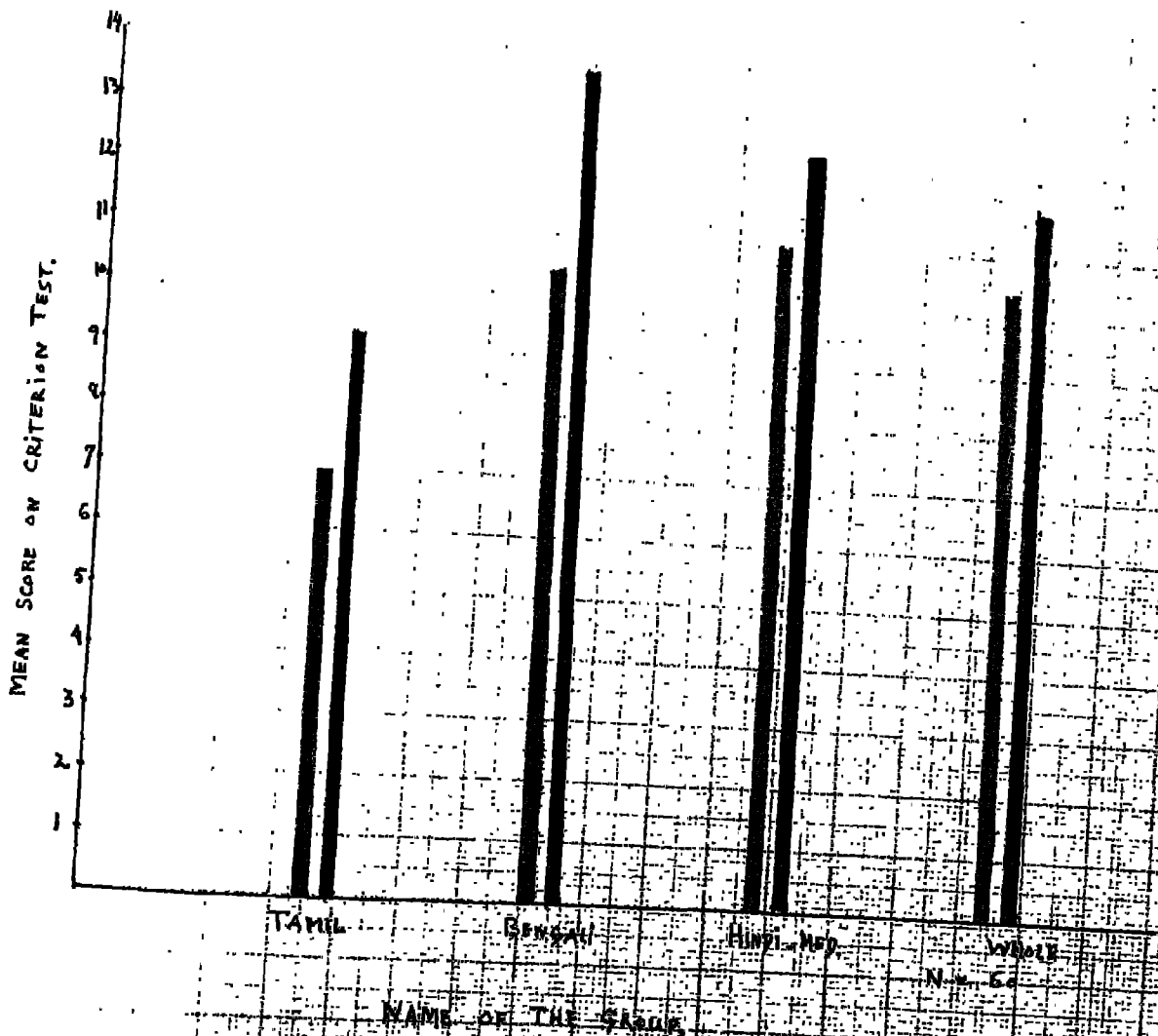
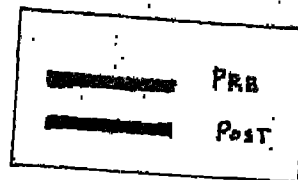
Mean and SD's of Sub-groups in
Pre, Post and General Ability Tests

	N	Tamil			Bengali			Hindi Med		
		Boys 8	Girls 12	Whole 20	Boys 20	Girls -	Whole 20	Boys 10	Girls 10	Whole 20
Pre- test	Mean	4.50	8.58	6.95	10.35	-	10.35	11.00	11.00	11.00
	SD	1.58	3.95	3.50	3.45	-	3.45	2.00	3.89	3.90
Post- test	Mean	8.13	9.83	9.20	13.60	-	13.60	13.00	11.80	12.40
	SD	3.04	3.11	2.97	2.01	-	2.01	2.52	2.56	2.55
Birk- Beck test	Mean	15.25	13.50	14.20	18.80	-	18.80	15.00	13.80	14.40
	SD	3.66	3.66	3.84	8.12	-	8.12	6.08	7.06	6.50
Memory Span test	Mean	9.12	8.67	8.85	10.20	-	10.20	10.20	9.50	9.85
	SD	1.40	2.19	2.37	1.60	-	1.60	1.72	1.85	1.75

A graphical presentation of the data is given in Diagrams C, D, E, F

DIAGRAM C

COMPARISON OF PRE- AND POST-TEST SCORES. (Boys Plus Girls)

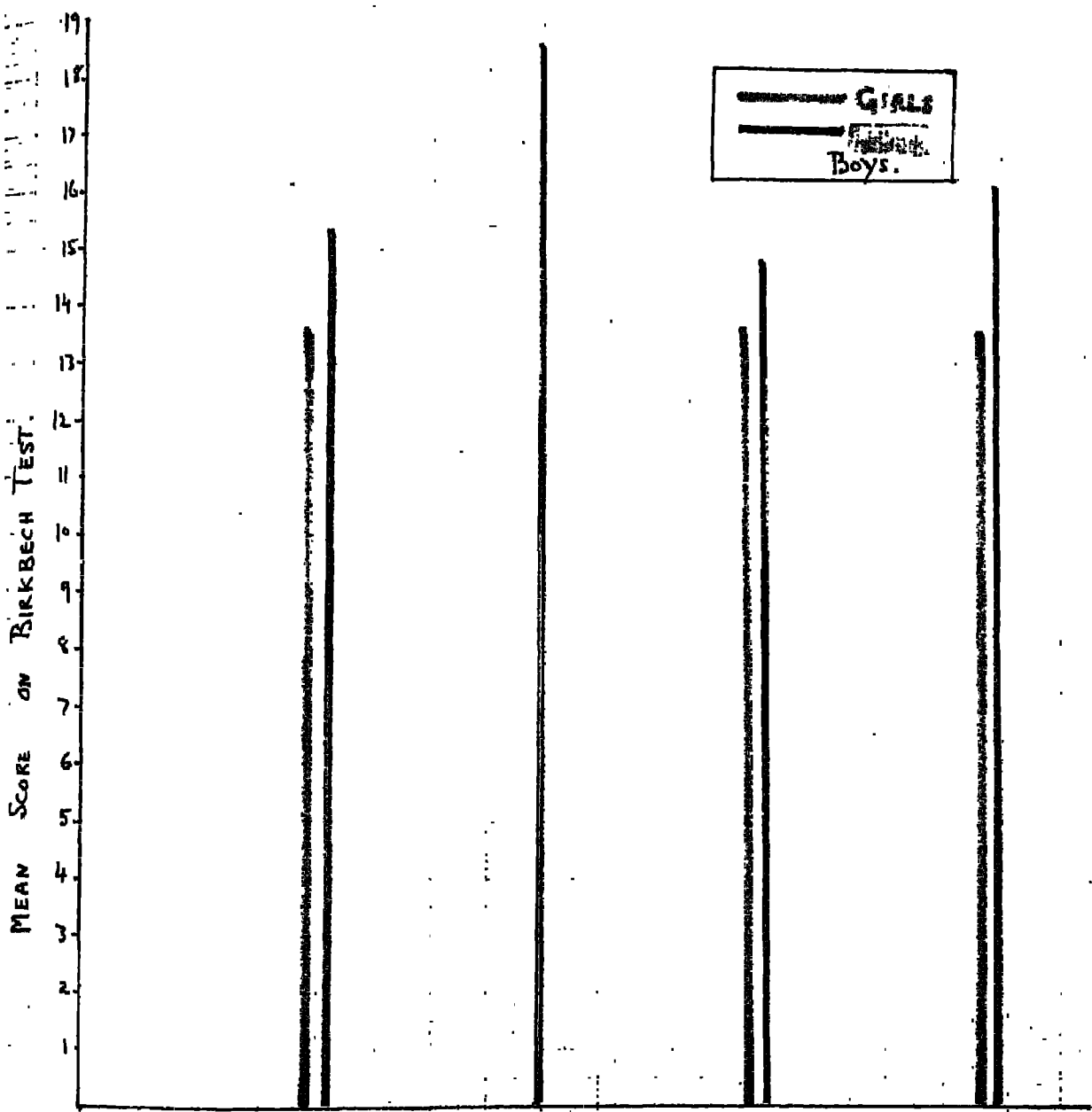


SCORE ON GENERAL ABILITY.

Boys AND GIRLS.

DIRMICK
TEST
MEMORY
SPAN

70
MEAN SCORE ON BIRKBECH TEST.



TAMIL

BENGALI

HINDI-MED

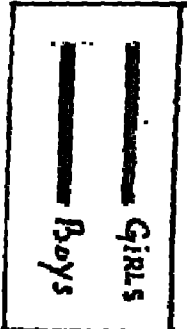
WHOLE

N = 60

NAME OF THE GROUP

DIAGRAM 1

MEAN SCORE ON MEMORY SPAN.



11
10
9



A t-test was applied to the pre and post tests of each sub-group separately to show the effectiveness of the teaching method. In each group t-values were calculated separately for boys and girls on their pre & post-test scores. Table 10 gives the results obtained.

TABLE 10

t-values of the Pre and Post-test of Each Group
for Boys, Girls and Whole

Group	Sex	N	Obtained t-ratio	df	Table value at				Level of significance
					.01	.02	.05	.10	
Bengali	Boys	20	4.77	19	1.73	2.09	2.54	2.86	.01
	Girls	12	1.03	11	3.17	2.76	2.23	1.80	NS
Tamil	Boys	8	4.22	7	3.50	3.00	2.36	1.90	.01
	Whole	20	2.50	19	1.73	2.09	2.54	2.86	.05
	Girls	10	.41	9	1.83	2.26	2.82	3.25	NS
Hindi Med.	Boys	10	1.54	9	1.83	2.26	2.82	3.25	NS
	Whole	20	1.90	19	1.73	2.09	2.54	2.86	.10

Table 10 indicates that in the Tamil group the performance of subjects on post-test over pre-test was significant at .05 level for the group as a whole. This shows the subjects did improve their performance indicating the effectiveness of the method. Though the girls did not show any significant improvement, boys showed a significant improvement.

The Bengali group (all boys) also improved very significantly as a result of the intensive drilling given by the LL method.

The Hindi medium group has not shown much statistical gains. This may be due to their initial higher ability in the language. The possibility of improvement in their cases was rather limited.

The result shows that the LL method of teaching is especially effective for teaching second languages, though there exists a degree of variation, in the improvement, which seems to have some relevance with linguistic back ground, motivating factors, intelligence etc.

Sex Differences in Performance:

The mean scores for girls and boys separately for each group were calculated to assess the differences in performance, if any, due to sex variable. The ideal gain percentages, were calculated separately for boys and girls, to show differences in performance due to sex. The tables 11, 12, 13 give the results obtained.

TABLE 11
Mean Scores of Pre and Post-test for Boys
of Each Group

Group	N	Pre				Post			
		Ear Tr.		Prod Total		Ear Tr.		Prod Total	
		A	B	A	B	A	B	A	B
MPS		5	10	15		5	10	15	
Bengali	20	3.95	6.40	10.35		4.75	8.80	13.60	
Tamil	8	2.50	2.00	4.50		3.75	4.50	8.13	
Hindi Med.	10	4.60	6.40	11.00		4.60	8.40	13.00	

Table 11 shows that boys of all three groups show some increase in post-test over pre-test, although not equally. The boys of the Bengali groups showed maximum improvement and those of the Tamil group least. Due to practical difficulties no girl was included in the Bengali medium group.

TABLE 12

Mean Scores of Pre- and Post-test for Girls of Each Group

Group	N	Pre			Post		
		Ear	tr.	Prod	Ear	tr.	Prod
		A	B	A B	A	B	A B
NC		5	10	15	1	10	15
Bengali	-	-	-	-	-	-	-
Tamil	12	3.91	4.50	8.58	4.33	5.50	9.83
Hindi Med.	10	4.00	7.00	11.00	4.60	7.20	11.80

Table 12 shows that there is not much difference in the mean scores of girls of the two groups, in post test over pre-test.

TABLE 13

Comparison of Boys and Girls in Performance on LL Method of Teaching

Group	Boys			Girls		
	Ideal gain %	t-value	Sig. level	Ideal gain %	t-value	Sig. level
Bengali	69.9	4.77	.01	-	-	-
Tamil	34.6	4.22	.01	19.5	1.03	NS
Hindi Med.	50.0	1.54	NS	20.0	.41	NS

A graphical presentation of the data is given in diagrams C and H.

DIAGRAM G
SEX DIFFERENCES
IN
MEAN PRE AND POST TEST SCORES.

Girls	-----	PRE
	-----	POST
Boys	-----	PRE
	-----	POST

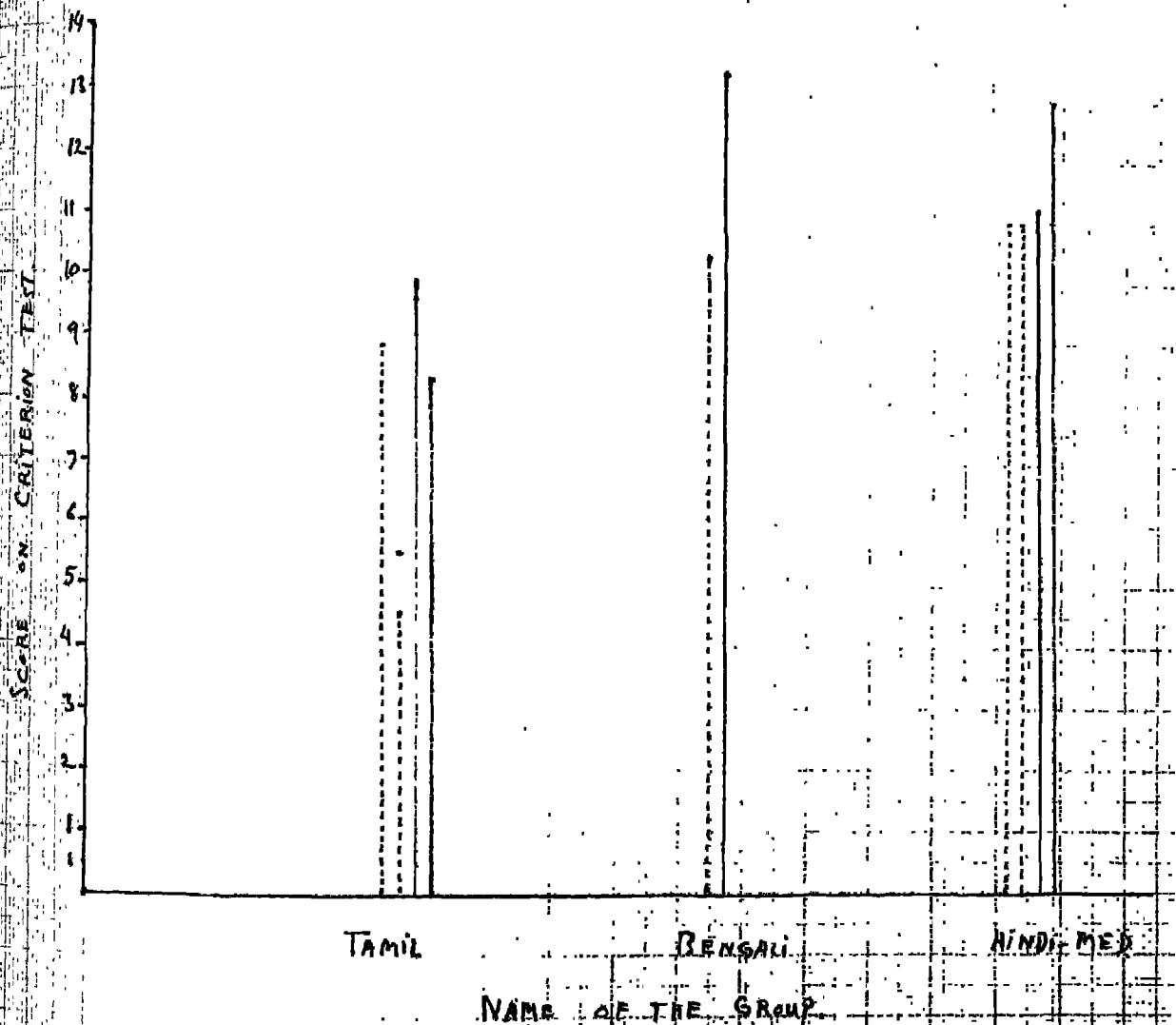
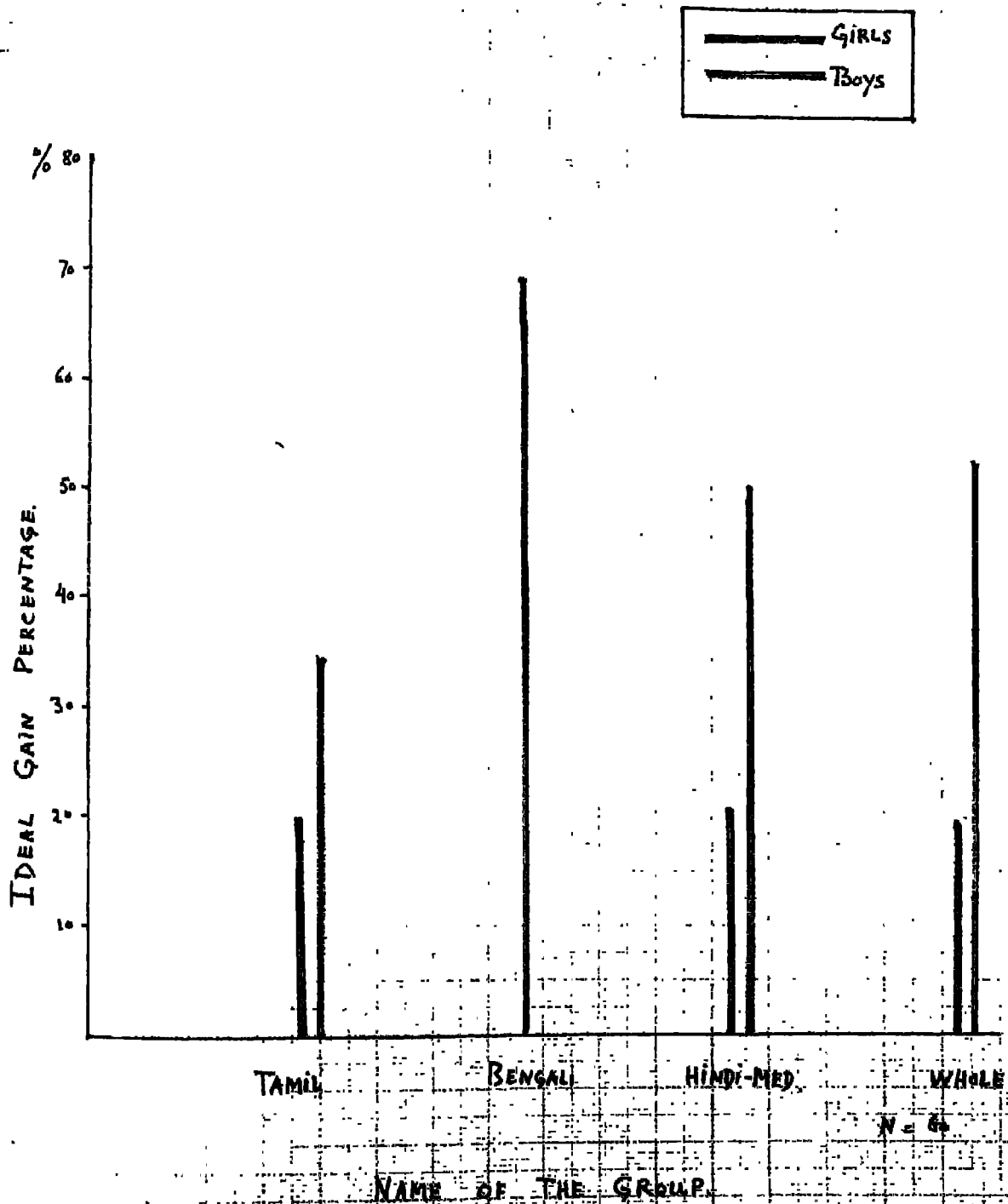


DIAGRAM II

SEX DIFFERENCES IN IDEAL GAIN PERCENTAGE (POST-OVER PRE-TEST).



It appears, that in this study, boys of the Tamil and the Hindi medium groups showed more improvement as compared to the girls of the corresponding groups as indicated by ideal gain percentage and t-ratio.

Comparison of Each Linguistic Group with Hindi Medium Group:

Analysis of variance was done to compare the performance of each linguistic group with the control group. The tables 14 & 15 give the summary of the analysis of variance.

TABLE 14

Analysis of Variance, Performance of Hindi Medium
Vs. Tamil Group

Source of Variation	df.	S.S.	M.S.	F	P
Between Groups	1	105.63	105.63	23.11	.01
Among Subjects	19	254.48	13.39	2.90	NS
Interaction	19	86.87	4.57		
Total	39	446.98			

Table 14 shows the performance of the two groups, Hindi medium and Tamil differs and is statistically significant at .01 level.

TABLE 15

Analysis of Variance, Performance of Hindi Medium
Vs. Bengali Group

Source of Variation	df.	S.S.	M.S.	F.	P
Between Groups	1	14.40	14.40	2.69	NS
Among Subjects	19	116.0	6.11	1.14	NS
Interaction	19	101.60	5.34		
Total	39	232.0			

Table 15 shows that there is no statistically significant difference in the performance of the Bengali and Hindi medium group. This could be due to higher motivation and intellectual level of the Bengali group.

Correlation between intelligence and scores on criterion test:

To find out the relation between scores on criterion test and intelligence, correlations were calculated between scores on Birkbeck test and pre-test, Birkbeck test and post test. High correlation indicates that higher the general ability higher the achievement on the criterion tests, while low correlation indicates the opposite.

TABLE 16
Correlation Between Pre-test Scores and Scores on Birkbeck Test

Group	Boys	Girls	Whole
Bengali	.33	-	.33
Tamil	-.37	0.00	-.18
Hindi Med.	-.32	.31	.13

TABLE 17
Correlation Between Post-test Scores and Scores on Birkbeck Test

Group	Boys	Girls	Whole
Bengali	.01	-	.01
Tamil	-.01	-.32	-.27
Hindi Med.	-.40	-.001	.14

Tables 16 & 17, show that there exists no correlation, to a low negative correlation between intelligence and achievement, in this case. This shows that students can benefit from LL method of teaching irrespective of their intellectual abilities, because in this method enough drilling is given and each student learns at his own rate.

Correlation Between Memory Span and Scores on Criterion Test:

The relationship between memory span and pre-test and post-test were studied. The results are shown in the tables 18 & 19.

TABLE 18

Correlation Between Pre-test Scores and Scores on Memory Span

Group	Boys	Girls	Whole
Tamil	.20	.39	.23
Bengali	-	-	.45
Hindi Med.	0.00	0.55	.28

TABLE 19

Correlation Between Post-test Scores and Scores on Memory Span

Group	Boys	Girls	Whole
Tamil	.21	.23	.18
Bengali	-	-	.27
Hindi Med.	.55	.13	.40

Table 18 & 19 show there is low to moderate correlation between memory span and achievement, meaning thereby, that memory is an important factor in learning of a second language. The correlation varies from group to group and from pre to post-test.

Correlation Between Examination Anxiety Test Scores and Scores on Post-test:

To find out the extent to which anxiety affects achievement correlations were calculated between scores on Examination Anxiety test and criterion test. Correlations for boys and girls as well as whole were calculated for each group.

TABLE 20
Correlation Between Scores on E.A.T. and Post-test

Group	Boys	Girls	Whole
Tamil	.34	.12	-.13
Bengali	-	-	.07
Hindi Med.	.38	.24	.78

The result shows low to good correlation between anxiety and achievement. This indicates anxiety has some facilitating factors which improve performance in a test situation. But there is variation in the results of the three groups.

Correlation Between Pre-test and Post-test Scores in Each Group:

The results are given in the table 21.

TABLE 21

Correlation Between Pre- and Post-test Scores

Group	Boys	Girls	Whole
Tamil	.55	.08	.31
Ben. ali	-	-	.48
Hindi Med.	.31	.64	.50

Table 21 shows that pre-test scores are to some extent reliable in predicting post-test scores, as there is a low to moderate correlation between them. There is variation between group to group, for in the case of girls in Tamil group the correlation is only .08, whereas for girls in Hindi medium group it is .64.

Correlation Between Ear-training and Production:

For both pre and post test, the relationship between ear-training and production were studied. The results are shown in the table 22 & 23.

TABLE 22Correlation Between Ear-training and Production
in Pre-test

Group	Boys	Girls	Whole
Tamil	-.54	.19	.16
Bengali	-	-	.19
Hindi Med.	-.37	.12	-.40

TABLE 23Correlation Between Ear-training and Production
in Post-test

Group	Boys	Girls	Whole
Tamil	-.30	-.32	-.29
Bengali	-	-	.12
Hindi Med.	.61	.15	.17

There appears no systematic relation between ear-training and production, both in pre and post-test. In some cases it is found to increase and in some to decrease. This indicates that there is a difference in the way a sound is discriminated when heard and pronounced.

Correct Responses in Ear-training and Production:

The tables 24 & 25 give the number of correct responses made in ear-training and production in both pre and post-test.

TABLE 24Number of Correct Judgements in Ear-training

(N = 20 in each group)

Group	Tamil		Bengali		Hindi Med.	
	Pre	Post	Pre	Post	Pre	Post
<u>सु/सु</u>	19	15	18	18	18	19
<u>सु/सु</u>	14	16	15	19	19	18
	14	16	18	20	18	16
<u>सु/सु</u>	13	15	19	19	15	19
<u>सु/सु</u>	17	16	19	19	17	18
Total	77	78	89	95	87	90

(Correct sounds are underlined)

Number of correct judgements in pre-test of all subjects = 253

Number of correct judgements in post-test of all subjects = 263

TABLE 25Number of Correct Responses in Production

(N = 20 in each group)

Group	Tamil		Bengali		Hindi Med.	
	Pre	Post	Pre	Post	Pre	Post
<u>सु/सु</u>	19	19	20	19	20	19
<u>सु/सु</u>	16	17	15	16	19	18
<u>सु/सु</u>	10	12	66	20	17	18
<u>सु/सु</u>	13	7	6	15	10	16
<u>सु/सु</u>	10	17	19	19	19	18
<u>सु/सु</u>						
Total	68	72	68	89	95	89

(Correct sounds are underlined)

Number of correct responses in pre-test of all subjects 231
 Number of correct responses in post-test of all subjects 250

Tables 24 & 25 show that there is a difference in groups, but in the Bengali group there are maximum number of correct responses in ear-training, whereas the Tamil group did the worst. In production test, the Hindi medium group's performance was the best and Tamil group worst. But in all groups there was an improvement in post-test over the pre-test, in both ear-training and production. Although more correct judgements are made in ear-training than correct responses in production.

Summary of the Information Regarding Linguistic Background

About all the subjects:

TABLE 26

Language Used at Home, Schools and in Correspondence
by the Subjects

(N 20 in each group)

Group	Native Lang.	Language spoken at Home	Language spoken at School	Language used in Correspondence
Bengali	20B	20B	12B, 2E, 6BE	14E, 1BE, 5B
Tamil	19T, 1M	17T, 2TE, 1M	1EH, 1EHT, 7T, 6E, 5TE	9ET, 5T, 6E
Hindi Med.	2T, 4G, 2M, 3E, 9P	7P, 4G, 1E, 1M, 6H, 1T	7HE, 8E, 5H	17E, 3HE

(T - Tamil, M - Marathi, E - English, H - Hindi, B - Bengali
 P - Punjabi, G - Gujarati)

Table 26 shows that in the Bengali group, all subjects speak Bengali at home and it is their native language. 70% of them

correspond in English and 25% of them in Bengali. 60% of them speak Bengali at school also.

In the Tamil group, 95% have Tamil as their native language, 85% speak it at home.

The Hindi medium group is a mixed group, out of all, for 45% Punjabi is the native language and 35% speak it in school. 85% of the whole group correspond in English.

Student's Attitude to LL Method of Instructions:

Attitude questionnaire were analysed in three different categories.

Table 27, shows the responses of all the subjects (N = 60) who participated in the study. Table 28, give percentage of boys and girls to give a comparison of attitude to LL, due to sex difference. Table 29, gives the results of all the groups separately.

Attitude of all Subjects Towards LL and Hindi:

Out of the total number of students (N = 60), 41.4% agreed that they prefer LL lessons to classroom lectures, 59.8% agreed that 'this course of language teaching was interesting'. 38.7% thought they could learn better in LL. 56.5% found the LL lessons more interesting than a normal classroom lecture. 53.2% agreed that they would like to take another course of language learning in a LL. 69.3% found the course easy to do and 73.4% said the instructions were useful in the programme, although only 28.8%

TABLE 27

Percentage Distribution of Attitude Questionnaire of
all Subjects

(N = 60)

X	Agree 'Inolli- No p. 2 (1961) (1961) (1961)					Y
	with X 'agree with	'Inolli- ned to 'agree with	No p. 2 'for X 'or Y	(1961) 'agree with Y	(1961) 'agree with Y	
1. I dislike Hindi	14.6	17.7	28.4	10.4	28.8	1. I like Hindi
2. I find Hindi very easy	29.8	5.4	17.8	14.8	30.4	2. I find Hindi very difficult
3. I prefer language laboratory lessons	41.4	12.7	15	3.8	26.6	3. I prefer class-room lecture
4. I found this course of language teaching interesting	59.8	22.5	9.1	2.6	6.1	4. I found this course of language teaching boring
5. I think I could have learnt better in classroom	28.8	7.5	12.5	12.5	38.7	5. I think I learnt better in language laboratory
6. I found the language lessons less interesting than a normal class-room lecture	15.5	8.5	8.2	11.3	66.5	6. I found the language lessons more interesting than a normal class-room course
7. I would like to take another course of language learning by language laboratory	53.2	12.5	18.2	6.1	10.4	7. I would prefer not to take other course language laboratory.

(Contd.)

8. This course was difficult	2.6	15.1	13.2	69.3	8. This course was easy to do
9. The instruct- ions were use- ful in the programme	73.4	3.3	10.8	4.1	8.4
9. The instruction in the progre- me were unn- ecessary					
10. I would prefer to be taught by the langu- age laboratory course	33.3	7.6	16.1	11.6	32.6
10. I would prefer to be taught by teacher in classroom					

TABLE 28

Percentage Distribution for Attitude Questionnaire
Boys vs Girls

(Boys = 38, Girls = 22)

X	Agree with X Ineli- No pre- Ineli- agree ned to ferenced to with Y agree for X agree with X or Y with Y					Y
1. I dislike Hindi	B: 22.5	15.0	30.8	10.8	20.8	1. I like Hindi
	G: 18.3	21.6	10.0	50.0		
2. I find Hindi very easy	B: 29.2	7.5	16.6	15.8	30.8	2. I find Hindi very difficult
	G: 28.3	20.8	13.3	37.5		
3. I prefer language laboratory lessons	B: 38.2	6.6	15.0	4.1	35.8	3. I prefer class-room lecture
	G: 49.1	17.5	17.5	5.0	11.2	
4. I found this course of language teaching interesting	B: 64.2	16.6	13.3	4.2	1.6	4. I found this course of language teaching boring
	G: 53.3	28.3	5.0	13.3		
5. I think I could have learnt better in class-room	B: 38.3	3.3	10.0	15.8	32.5	5. I think I learnt better in language laboratory
	G: 24.1	13.3	17.5	45.0		
6. I found the language lessons less interesting than a normal classroom lecture	B: 13.3	10.8	8.3	6.8	60.8	6. I found the language lessons more interesting than a normal class-room course
	G: 24.1	4.1	9.2	14.1	48.3	

(Contd.)

89

7. I would like to take another course of language by language laboratory	B: 47.6	19.2	16.6	1.6	15.0	7. I would prefer not to take another course of language laboratory
	G: 55.8		21.6	13.3	9.1	
8. This course was difficult	B: 4.2		17.5	14.1	64.1	8. This course was easy to do
	G:		9.1	14.1	76.7	
9. The instructions were useful in the programme	B: 67.5	1.6	13.3	8.3	9.1	9. The instruction in the programme were unnecessary
	G: 86.6	4.1	5.0		4.1	
10. I would prefer to be taught by the language laboratory course	B: 40.0	7.3	13.3	5.0	34.1	10. I would prefer to be taught by teacher in classroom
	G: 21.6	5.0	13.3	20.0	40.0	

agreed that they liked Hindi and 29.8% found Hindi very easy, they all showed a very favourable attitude towards language laboratory method of teaching language. (See table 27).

Difference in Attitude Towards LL due to Sex Differences:

Out of the total number of girls (N = 22) 49.1% agreed that they prefer LL lessons to classroom lecture against 38.2% of the boys (N = 38), 64.2% of the boys found this course of language teaching interesting as against 53.3% of the girls. 47.6% of the boys agreed that they would like to take another course of language learning by LL as against 55.8% of the girls. 64.1% of the boys agreed this course was easy to do as against 76.7% of the girls. 67.5% and 86.6% of the boys and girls respectively agreed that instructions in the programme were useful. This shows that both boys and girls showed a positive attitude towards the LL method of teaching although only 20.8% of the boys agreed that they liked Hindi and 30.8% found Hindi very difficult, whereas among girls 50% liked Hindi and only 37.5% found Hindi very difficult.

The results show that boys showed a greater preference for LL lessons and found the course interesting, than girls, whereas girls showed a greater preference for taking another course of language learning by LL, found Hindi easy, although found the course difficult to take.

TABLE 29

Percentage Distribution for Attitude Questionnaire
for Each Group

(N = 20 in each group)

T - Tamil, B - Bengali, H - Hindi Med.

X	Agree with X In Hindi No preference In English Agree with Y					Y
	Agree with X In Hindi No preference In English Agree with Y					
1. I dislike Hindi	B: 20.0	25.0	35.0	10.0	10.0	1. I like Hindi
	T: 18.7	8.3	35.4	6.2	31.4	
	H: 5.0	20.0	15.0	15.0	45.0	
2. I find Hindi very easy	B: 35.0	10.0	15.0	25.0	15.0	2. I find Hindi very difficult
	T: 14.5	6.2	33.3	14.5	31.4	
	H: 40.0		5.0	10.0	45.0	
3. I prefer language laboratory lessons	B: 40.0	20.0	10.0		30.0	3. I prefer classroom lecture
	T: 29.2	12.5	25.0	6.2	25.0	
	H: 55.0	5.0	10.0	5.0	25.0	
4. I found this course of language teaching interesting	B: 60.0	30.0	5.0		5.0	4. I found this course of language teaching boring
	T: 64.6	8.3	12.5	6.2	8.3	
	H: 55.0	30.0	10.0		5.0	
5. I think I could have learnt better in classroom	B: 10.0	10.0	10.0	25.0	45.0	5. I think I learnt better in language laboratory
	T: 41.6	8.3	12.5	6.2	31.2	
	H: 35.0	5.0	15.0	5.0	40.0	

(Contd.)

92

6. I found the language lessons less interesting than a normal classroom lecture	B: 5.0	10.0	5.0	20.0	60.0	6. I found the language lessons more interesting than a normal classroom course
	T: 16.7	10.4	4.1	4.1	64.5	
	H: 25.0	5.0	15.0	10.0	45.00	
7. I would like to take another course of language learning by language laboratory	B: 65.0	15.0	15.0	5.0		7. I would prefer not to take another course of language laboratory
	T: 39.6	6.2	29.1	8.3	16.6	
	H: 55.0	15.0	10.0	5.0	15.0	
8. This course was difficult	B:		20.0	10.0	70.0	8. This course was not easy to do
	T: 6.2		10.4	10.4	72.9	
	H:		15.0	20.0	65.0	
9. The instructions were useful in the programme	B: 65.0	5.0	15.0		15.0	9. The instruction in the programme were unnecessary
	T: 60.4	4.1	12.5	12.5	10.4	
	H: 95.0		5.0			
10. I would prefer to be taught by the language laboratory course	B: 35.0	10.0	30.0	15.0	10.0	10. I would prefer to be taught by teacher in classroom
	T: 29.1	6.2	8.3		56.2	
	H: 35.0	5.0	10.0	20.0	30.0	

Differences in Attitude Towards LL Due to Group Differences:

All groups showed a favourable attitude towards LL method of teaching. 40% of the Bengali, 29.2% of Tamil and 55% of the Hindi medium subjects showed preference for the language laboratory lessons. 60% of the Bengali, 64.6% of the Tamil and 55% of the Hindi medium subjects found the LL course interesting. 65% of the Bengali, 39.6% of the Tamil and 55% of the Hindi medium subjects agreed that they would like to take another course of language learning by LL. More than 65% of each group found the course easy to do and instructions useful. The Tamil group showed a less favourable attitude than the other two groups. 31.4% of the Tamil group liked Hindi as against 10% of the Bengali and 45% of the Hindi medium group.

Teacher's Attitude to LL:

The teachers too showed a very favourable attitude to the LL system. 66.3% agreed that students can learn better in LL than in classroom. 66.6% agreed, the method should be carried on in schools, whereas only 33.3% agreed that this method is administratively possible. 66.6% agreed that such laboratory could not be maintained in their schools. They all agreed that this method would save teacher's time and efforts and still have the usual regard for teachers.

TABLE 30

Percentage Distribution for "Teacher's Attitude to
Language Laboratory Questionnaire"

(N = 3)

X	Agree with X	Incli- ned to agree with X	No pre- ference for X or Y	Incli- ned to agree with Y	Agree with Y	Y
1. Students can learn better in language laboratory than in classroom	66.6 66.6				33.3 33.3	1. Students cannot learn better in language labora- tory, than in classroom
2. Students Sh- all be more motivated to learn a lan- guage in lan- guage labo- ratory	66.6	33.3				2. Students shall not be motivated to learn a lan- guage in langu- age laboratory
3. This method should be carried on in schools	66.6					3. This method need not be carried on in schools
4. Administrati- vely this method is plausible	33.3	33.3			33.3	4. Administratively this method is not plausible
5. Economically, language laboratory is not possible to maintain	33.3				66.6	5. Economically, language labora- tory is possible to maintain

6. The maintenance of each laboratory is possible in my school			33.3		66.6	6. The maintenance of such laboratory is not possible in my school
7. I would prefer to teach my students myself	33.3				66.6	7. I would prefer my students to be taught by language laboratory
8. Do you think this method can save teachers time and efforts	100					8. Do you think this method cannot save teacher's time and efforts
9. Students shall observe discipline in language laboratory	100					9. Students shall not observe discipline in language laboratory
10. Students learning by language laboratory shall care less for teachers					100	10. Students shall have usual regard for teachers

Please write your comments about language laboratory.

Teacher's Subjective View towards LI:

All teachers showed a keen desire to undergo some such course for teachers. They all expressed their doubt regarding the maintenance of such equipment in schools, because of the high cost.

Qualitative Assessment of Student's Attitude and Difficulties:

An informal and short interview with some of the students showed that they all had a very favourable attitude towards language laboratory method. They all wanted to come back for another course. Observation of their behaviour during the experiment showed:

1. There were a few cases, which, could not follow the instructions of the lessons, the mechanism etc and required some individual attention.
2. For all the students the student booth and its equipment seemed a novel thing.
3. Most of them were very interested to know as to why the course was being undertaken.
4. They were very keen to know the results of their performance
5. The length of the programme made some of the subjects a little restless.
6. The students who appeared more interested in the programme performed better.
7. They all maintained discipline in the LI situation.

Language plays an important role in education and no system of education can be complete unless the study of language receives proper emphasis in it. In Indian context, language learning has an even more important part because of our "Three Language Formula".

LL is a unique method of teaching languages based on technological and psychological concepts. In our schools, it is now almost a norm to teach atleast three languages viz. English, Hindi and regional language. In the modern approach, of teaching language, LL system is a useful aid. The Language Laboratory conference Report (1961) mentions "The trend in foreign language teaching today is towards the five-fold objectives of listening, understanding, speaking, reading and writing in descending order of emphasis. Language Laboratory is an invaluable mechanical aid in reinforcing what has been first presented and studied in the classroom and other situations.

The proper value of LL in teaching second languages has not been much studied in India. No significant work has been done in India in teaching Hindi through a LL.

Keeping these factors in mind this investigation was undertaken. The objectives of the present experiment was to

find out the effectiveness of LL in teaching Hindi pronunciation and to find the differences in achievement in Hindi pronunciation as affected by (1) general ability, (2) sex differences, (3) linguistic background of the subjects. The subjects attitude towards this method of instruction was studied.

Two linguistic groups (boys and girls) were employed for the study viz. Bengali and Tamil, for whom Hindi is a second or third language. A control group of Hindi medium students were employed for purposes of comparison. All the three groups were taken from secondary schools of Delhi. Each group was called separately to the Central Language Laboratory of the National Institute of Education, NCERT. They were given experimental teaching in LL on Hindi phonemes. A pre-test and a post test were given to evaluate the effectiveness of the method. The results were statistically analysed. The 'attitude questionnaires' were analysed to find the attitude of students and teachers towards the LL method of teaching.

The results showed the effectiveness of the method to be statistically significant at .01 level. The ideal gain percentage in post test over pre-test for all subjects ($N = 60$) was 43.9%. Though there was a moderate correlation of achievement with memory span, intelligence was found to be negatively correlated with achievement. Perhaps intelligent students

find the system monotonous. It was also not possible to administer a complete test of intelligence.

The results on Examination Anxiety test showed that higher the facilitating factors of learning in anxiety, higher the achievement. Students as well as teachers showed a very favourable attitude towards LL system of teaching. Differences in achievement due to sex differences was not clear from this study. Linguistic background also seemed to be a factor in the effectiveness of the method.

Conclusions:

The quantitative, and qualitative analysis of the data, lead to following tentative conclusions:

1. The LL method of teaching Hindi pronunciation was found to be effective to secondary school students who are studying Hindi as a second/third language.
2. The two linguistic groups were found to differ in their performance on the criterion test.
3. All the three groups differed in their ideal gain percentage in post test over pre-test.
4. Differences in achievement due to sex differences were not clear from this study.
5. Comparison of linguistic groups (experimental) with Hindi medium (control) group showed, that there exists a difference in the performance of Tamil students but not in the Bengali group.

6. There possibly exists some differences in the achievement of subjects, due to general achievement.
7. The results tend to suggest that optimum anxiety has some facilitating effect, which improve performance in a test situation.
8. Pre-test scores were to some extent reliable in predicting post-test scores.
9. Scores on the criterion test were found to be negatively correlated to intelligence test scores. Positive correlation was found in memory span score and criterion test.
10. All groups showed a very favourable attitude towards the LL system and preferred the LL method to, usual classroom instruction of pronunciation.
11. The teachers also showed a favourable attitude towards the LL system, but expressed some doubt about its feasibility in view of the high cost of the equipment.

The results of ideal gain percentage show that the Tamil group gained 23.5% as compared to the Bengali group which improved by 69.9%. The difference in improvement, were probably due to the similarity of the "filter language" for the Bengali groups, who probably gained a lot by this method of teaching. On the other hand the Tamil group may have gained less because of their less observable motivation than the Bengali group.

On the whole, an ideal gain percentage of 43.9% was found as a result on the LL system of teaching.

Discussion:

Although the results show the LL method of teaching to be very effective and attitude of students and teachers towards it ver. favourable, the study suffers from some limitation, a few of them are as follows:

1. The lessons were selected with the help of a linguistic expert, without any earlier try-out. At a later stage it seemed that minor modification of the lessons might have made them more effective.
2. Care was taken to select a random sample, but probably there was some difference in the general ability, socio-economic background, linguistic background of the students of each of the experimental and control groups.
3. Due to limitation of time, only one administration was possible, which probably is not sufficient in teaching pronunciation of a second language.
4. The language laboratory lessons could not be supplemented with visual aids, which would have facilitated the learning of articulation.
5. The post-test was administered immediately after the experimental teaching and administration of a retention test was not possible, which could indicate the effectiveness of the method after a time lapse, say six weeks.

6. Though sex differences were studied, equal number of boys and girls was not possible to obtain in a field situation.
7. It was not possible to administer a complete test of intelligence, which would have given a better indication of the students verbal and non-verbal abilities.
8. The novelty factor may have interfered in the performance and motivation of the students, as it was a first time in the life of the students to have come to a language laboratory. Due to time limitation this handicap could not be overcome.

Suggestions:

India is a multilingual country and the study of one or more Modern Indian Languages is a part of the school curriculum. We should embark on the expanse of language laboratory facilities as almost a crash programme. Every rupee spent on its investment will pay heavy dividends in the near future. The NURELAL report (1969) suggests "The important point to remember is the fact that we should grow the required facilities on our soil. This implies planned action in all phases of the problem in such a way that we get the required material for the functional teaching of languages, make the equipment through a network of small scale industries, and grow the teachers and instructors required to the proper stature."

There are four handicaps for the expansion of LL facilities in the country - (1) inadequate funds, (2) inadequate teaching material, (3) local lack of adequate equipment, (4) attitude of teachers.

Even if the schools and college do not have LL facilities to begin with, it is very important that we prepare the material and keep it ready. It is also extremely important that we train a very large body of teachers who become competent to undertake this new type of work.

It is necessary to have one full-fledged centre in the country where the equipment required for LL's are properly tested. Such a centre will be required to examine the feasibility and usefulness of any new designs submitted.

In the absence of LL, tape records can be used to serve the same purpose, and its effectiveness studied in teaching Languages.

To study the effectiveness of LL, in teaching languages, experiments can be carried out in teaching grammar, comprehension, translation and spelling etc.

An experimental study could be conducted with different age groups to see that in which age group or educational groups LL method of teaching could be most effective.

A study showing the progressive improvement after each administration of the LL lesson tapes can also be conducted.

LL is an individualized medium of teaching, as its effectiveness could be studied in developing language skills in children who do not develop their full potentialities of speaking; mother-tongue due to emotional fears etc.

Another problem for investigation could be its effectiveness in teaching verbal skills to mentally retarded children.

Yet another problem for investigation could be the use of similar laboratories in teaching other subjects.

Although a lot of progress has been made in respect to LL's a lot of research yet needs to be done in this connection.

BIBLIOGRAPHY

- Alpert, A. Habert, R.N. (1960) Anxiety in Academic Achievement Situations. Journal of Abnormal and Social Psychology. Vol.61 No.2. 207-215.
- Antioch College (1960) Experiment in French Language Instruction; Second report. In Handbook of Research on Teaching. (Ed.) Gage N.L. Chicago, Rand McNally.
- Basu C.K., Jeyal, C.S., Mishra, C. (1970) A Note on Programming Instructional Material for Teaching Second/Third Languages in India. IARL News Letter Vol.V No.4. 1-8.
- Basu, S., Dave, R.N. (1967) NIE Language Laboratory and Language Teaching. Miscographed background paper. New-Delhi, NCERT.
- Bauer, E.n. (1959) An Experimental Study of the Achievement in Learning a Foreign Language, through comparison in Classes with and without Audio-aids of LL. Master's Thesis. DePan. Univ. Cited in Research on Language Teaching (Ed) Norstrand, R.E. Seattle, Univ. of Washington.

Bennet, W.A. ()

The Language Laboratory and Higher Education in Media and Methods Instructional Technology. McGraw-Hill Publishing Company Ltd. 1969.

Billow, F.L. (1961)

Techniques of Language Teaching.

London: Longmans, Green and Co. Ltd

Brushwood, J.C.
Polmantier, F.C. (1952)

The Effectiveness of Audio Laboratory. Univ. of Missouri Bulletin.

As Cited in Research on Language Teaching. (Ed.) Norstrand, H.E. Seattle

Univ. of Washington Press.

Campbell, R.N. (1967)

The Language Laboratory and Pronunciation Teaching. English Language Teaching. Vol.22. 148-153.

Carroll, J.B. (1963)

Research on Teaching Foreign Languages. In Handbook of Research on Teaching. (Ed.) Gage N.L., Chicago, Rand McNally.

Carroll, J.B. (1964)

Language and Thought Prentice-Hall Foundations of Modern Psychological Series. Prentice-Hall Inc., Englewood Cliffs, New-Jersey.

Dececco, J.P. (1964)

Educational Technology. New-York, Holt, Rinehart & Winston.

- Deese, J.P. (1968) The Psychology of Learning and Instruction: Educational Psychology. Prentice-Hall, Inc. Englewood Cliffs, N.J.
- Desai, D.A. (1965) Audio-Visual Material and Technique in Language Learning. Journal of Education and Psychology. Vol.23 42-48.
- Etneekjian, J.(1966) Pattern Drills in Language Teaching London, Univ. of London Press Ltd.
- Flower, F.D.(1966) Language & Education. London Longmans, Green & Co. Ltd.
- Fotos, J.T. (1953) Purdue Laboratory Method in Teaching Beginning French Course. Modern Language Journal XXXIX. 141-43.
- Fries, C.C.(1963) Linguistics and Reading. New-York Holt, Rinehart, Winston, Inc.
- Frisby, A....(1959) Teaching English. Notes and Comments on Teaching English Overseas. London Longmans, Green & Co. Ltd.
- Gage, N.L. (1963) Handbook of Research on Teaching. Chicago, Rand McNally.
- Gupta, A.(1961) Shastri Quarterly Central Hindi Directorate, Education Ministry. Govt. of India. New Delhi.

- Halliday, M.A.A., McIntosh, A.,
Strevens, P. (1964) The Linguistic Sciences and
Language Teaching. London, Long-
mans, Green and Co. Ltd.
- Hocking, E. (1964) Language Laboratory and Language
Learning Monograph 2. Department
of Audio-Visual Instruction. National
Education Association of the United
States.
- Hocking, E. Merchant, R.C.
(1959) The Fabulous Language Laboratories,
Chicago, Educational Screen & Audio-
Visual Guide.
- Hutchings A.W.S. The Teaching of Modern Languages.
- Kirch, M... (1963) 'The Role of the Language Laboratory'.
Modern Language Journal. Vol.47.
256-60.
- Littson, E.C.(1924) Theory and Practice of Language
Teaching
- Lado, R.(1964) Language Teaching - A Scientific
Approach. New-York, McGraw-Hill, Inc.
- Lado, R. (1961) Language Testing. London: Longmans.
- Lautenegger, R.R., Mueller,
T.H., Wershaw, I.R. (1965) Auditory Factors in Foreign Language
Acquisition. Modern Language Journal
Vol. XLIX. 22-31.

- Lindzey, G., Aronson, E. (1969) Handbook of Social Psychology Vol. III
2nd Ed., London, Addison Wefley Publishing Co.
- Locke, K.N. (1965) 'The Future of Language Laboratories'
Modern Language Journal. Vol. XLIX
294-304.
- Machwa, A. (1970) Development of Indian Languages in
Indian Education. The Education
Quarterly. Ministry of Education
and Youth Services. New Delhi.
Government of India.
- Meiden, W. Murphy, J.A. (1971) The Language Laboratory and the
Reading Lesson. English Teaching
Forum. Vol. IX No. 5. 23-25.
- MLA (1950) The Language Laboratory Report. No. 1.
The Association 1950, (20P.).
- Moore, P. (1962) 'A Language Laboratory Experiment
in the Junior High School' Modern
Language Journal. Vol. 46. 269-271.
- Murarka, I.B. (1970) A Study of Programmed Instruction
in Teaching Statistics to Undergra-
duate Students. Unpublished Master's
Thesis. Univ. of Delhi. Delhi.
- Najan, E.W. (1962) Material and Techniques for the lan-
guage Laboratory. Indiana Univ.

- Nostrand, H.L. (1962) Research on Language Teaching.
Seattle, Univ. of Washington Press.
- Peterson A.J.C. (1965) Techniques of Teaching.
Pergamon Press Ltd. Vol.III Tertiary Education.
- Rimsleur, P. Mosberg, A.,
Morrison, A.L. (1962) 'Student Factors in Foreign Language Learning.' Modern Language Journal.
Vol.46. 160-170.
- Report on 'Language Laboratories in India', 1969. New Delhi NCERT.
- Report of the Second Language Laboratory Conference Held at
Purdue University. 1961. Ed. by K. Najam.
- Safaya, M.N. (1968) Current Problems in Indian Education.
Jullundur, Dhanpat Rai and Sons.
- Satyannarayana, M. (date unspecified) Promotion of Hindi Propagation -
Some Anomalies. Gandhi Nagar, Madras.
- Shukla, P.D. (1970) 'English in India Today and Tomorrow'
The Education Quarterly, Ministry of
Education and Youth Services. New-
Delhi. Govt. of India.
- Stack, E.M. (1960) The Language Laboratory and Modern
Language Teaching. New-York, Oxford
Univ. Press.
- Skinner, B.F. (1938) Why we Need Teaching Machines.
Harvard Education Review, 31. 377-98.

- Skinner, B.F. (1957) Verbal Behavior. Appleton-Cent-Crofts. New York.
- Spencer, A.E. (1966) 'The influence of disc or tape. Equipment on Foreign Language Speaking test score.' Modern Language Journal. Vol.I. 207-208.
- Tuli, K. C. (1971) An Experimental Study of Language Laboratory in Teaching Pronunciation. Unpublished Master's Thesis. Univ. of Delhi. Delhi.
- Turner, J.D. (1968) Programming for the Language Laboratory. London, Univ. of London Press.
- Turner, J.D. (1965) Introduction to the Language Laboratory. London, University of London Press.
- Wardhaugh, A. (1967) 'Some Current Problems in Second Language Teaching' Language Learning - A Journal of Applied Linguistics. Vol. XVII. 21-26.
- Yadav, R.K. (1966) The Indian Language Problem - A Comparative Study. National Publishing House. Delhi.

Appendix A : Statistical Formulae Used for Various Calculations.

Appendix B : General Ability Tests.

1. Kirkbeck test
2. Memory Span test

Appendix C : Criterion Test for Pre-test and Post-test

1. Ear-training
2. Production
3. Scoring Criterion

Appendix D : Introduction to Language Laboratory Questionnaire.

Appendix E : Teacher's Attitude to Language Laboratory Questionnaire.

Appendix F : Teacher's Rating Sheet for Students.

Appendix G : Examination Anxiety Test.

Appendix H : Script of Tapes.

A

1. Mean = $\frac{\sum X}{N}$
2. Mean comb = $\frac{N_1 M_1 + N_2 M_2 + \dots + N_k M_k}{N_1 + N_2 + \dots + N_k}$
3. S.D. = $\sqrt{\frac{\sum X^2}{N} - M^2}$
4. S.D. Comb = $\sqrt{\frac{N_1(\sigma_1^2 + d_1^2) + N_2(\sigma_2^2 + d_2^2) + \dots + N_k(\sigma_k^2 + d_k^2)}{N}}$
5. $SE_M = \sqrt{\frac{SD}{N-1}}$
6. $D = M_1 - M_2$
7. $SE_D = \sqrt{\sigma_1^2 + \sigma_2^2 - 2 r_{12} \sigma_1 \sigma_2}$
8. t-value = $\frac{D}{SE_D}$
9. $DF = (N_1 - 1) + (N_2 - 1)$
10. For correlation $r = \frac{\sum XY - (\sum X)(\sum Y)}{\sqrt{[\sum X^2 - (\sum X)^2][\sum Y^2 - (\sum Y)^2]}}$ (a Pearson computed from original data)
and $r = \frac{\sum XY}{\sqrt{\sum X^2 \sum Y^2}}$ (Alternative formula for a Pearson r)
11. Ideal gain percentage = $\frac{\text{obtained difference}}{\text{Maximum possible difference}} \times 100$
12. Two way Analysis of Variance

Sources:-

- Garrett, E., 1967. Statistics in Psychology and Education
New York : David McKay Company, Inc.
- Guilford, J.P., 1958. Statistics in Psychology and Education
New York : McGraw - Hill Book Company, Inc.

B1

PLEASE DO NOT TURN OVER YET

Surname (in BLOCK Letters) _____

First name _____

Age _____ Date of birth _____ Today's date _____

Occupation _____

Sex _____, School _____

Class _____

PLEASE DO NOT TURN OVER YET

In this test there are twenty-five questions. WHENEVER YOU SEE A CROSS, THERE IS A LETTER OR A NUMBER MISSED OUT. Write the missing letter or number in the box on the right of the page, like this:

1 2 3 4 5 x

6

Now do these:

- | | | | |
|-----|---------------------------------------|-------------------|----|
| 1. | A B C D E x | <u> </u> | 1 |
| 2. | 3 6 9 12 xx | <u> </u> | 2 |
| 3. | hot cold thick thin high xxx | <u> </u> | 3 |
| 4. | 12 23 34 4x | <u> </u> | 4 |
| 5. | month year inch xxxx | <u> </u> | 5 |
| 6. | growing rowing owing xxxx | <u> </u> | 6 |
| 7. | A T E T E A xxxxx | <u> </u> | 7 |
| 8. | on no net ten dial xxxxx | <u> </u> | 8 |
| 9. | 32123 43234 54345 xxxxx | <u> </u> | 9 |
| 10. | spin nips pins xxxxx | <u> </u> | 10 |
| 11. | a b c b a b c d c b e d e d e e xxxxx | <u> </u> | 11 |

(Contd.)

12.	A C E G I K M O Q x x x	_____	12
13.	first K third I fourth R second x	_____	13
14.	copper core barrel bale mallet x x x x	_____	14
15.	28514 42851 14285 x x x x x	_____	15
16.	retail at inform of nation xx	_____	16
17.	cube square sphere x x x x x x	_____	17
18.	3 10 4 17 5 26 6 x x	_____	18
19.	tractor car trot harbour bar xxxx	_____	19
20.	factories 123456789 store 9/568 crate x x x x x	_____	20
21.	glue stick twig nail post stake pull x x x x sketch	_____	21
22.	five 4 eight 5 two x	_____	22
23.	angle level ellipse xx ction	_____	23
24.	A D F I I L N Q x x x x	_____	24
25.	4125 48 75 273 39 45x	_____	25

Memory Span Test (taken from Rhetic's Battery)Answers - Rhetic

Two	ब - र ; ल - र , व - ल
Three	ल - व - क , ट - व - ल , ल - ट - र
Four	ब - र - व - ल , ट - ल - व - ल , र - व - ल - क
Five	ट - ल - ल - व - ल ब - ल - ट - र - ल र - ल - क - ल - ट
Six	ल - र - ट - ल - क - व व - ल - ल - र - व - ल र - व - क - ट - ल - व
Seven	र - व - व - क - ल - ल - ट ब - र - क - व - ट - व - ल क - व - र - ट - व - ल - व
Eight	व - व - ल - क - ट - ल - व - र ल - व - व - ल - व - क - र - ट ल - र - व - ट - क - ल - ल - व

(B2 Contd.)

Sounds : Backwards

Repeat sounds backwards.

Three

(**उ = व = ट ; ट = व = उ**)

Four

न = व = उ = त , व = उ = ट = इ , त = इ = उ = उ

Five

न = व = उ = त = ट

व = उ = इ = व = उ

Six

व = इ = उ = त = व = न

व = त = ट = त = व = न

इ = व = उ = व = उ = त

01
Criterion Test for Ear-Training
 (Same in Pre- and Post-test)

उच्चारणपरीक्षा ('ब' कण-व्यंजक)

इस पुस्तक पर वाक्यों के पांच युग्म () दिए गए हैं। हर युग्म में वाक्य 'ब' और वाक्य 'ब' लगाने एक जैसे हैं। दोनों वाक्यों में केवल एक ही अर्थ का अंतर है, जो :-

क) कौन सी कल बांसा

ख) कौन सी कल हांसा

आप छेन वाक्यों के प्रत्येक युग्म में से कोई एक वाक्य चुनें, जो 'ब' वा 'ब' होगा। वाक्य का अर्थ ध्यान से सुनिए और निशान लगाइए कि 'ब' वाक्य है 'ब' वाक्य। हर वाक्य तीन बार बोला जाएगा। अब हम शुरू करते हैं।

१) क) कहीं का मन रलना बाहिर (क) (ख)

ख) कहीं का मन रलना बाहिर

२) क) पैरु के नीचे एक पैर है (क) (ख)

ख) पैरु के नीचे एक पैर है

३) क) वहाँ एक बाग है (क) (ख)

ख) वहाँ एक बाग है

४) क) कुछ पान दे पाँ (क) (ख)

ख) कुछ पान दे पाँ

५) क) मालू से मा लीं (क) (ख)

ख) मालू से मा लीं

Scoring

6

analysis	Skill	Raw Score	Calculation	Adjusted Score	Corrected Score
Pron					
A: Ear-training	a(right)	a x 1	Max 5	
	b(wrong)			
	c(a - b)			
B: Prod'n	a(right)	a x 2	Max 10	
	b(wrong)			
	c(a - b)			
Total				Max 15	

Revision Test for Proficiency (Answer in Hindi-Part I).

हर वाक्य को तीन बार पढ़िए:

- 1) बड़ों का मन रतना गहिर।
- 2) पेड़ के नीचे एक बैस है।
- 3) कुछ जान दे दो।
- 4) वहाँ एक बाघ है।
- 5) मासू है मत खेती।

(ब) • (न) • (ब) • (ब) • (ब)

हर वाक्य को तीन बार पढ़िए:

- 1) बड़ों का मन रतना गहिर
- 2) पेड़ के नीचे एक बैस है।
- 3) कुछ जान दे दो।
- 4) वहाँ एक बाघ है।
- 5) मासू है मत खेती।

(ब) • (ब) • (न) • (ब) • (ब)

हर वाक्य को तीन बार पढ़िए:

- 1) बड़ों का मन रतना गहिर
- 2) पेड़ के नीचे एक बैस है।
- 3) कुछ जान दे दो।
- 4) वहाँ एक बाघ है।
- 5) मासू है मत खेती।

(ब) • (ब) • (ब) • (ब) • (ब)

Scoring Sheet for Production Test
(Same for Pre and Post Test)

नाम।

मन - - - (अ)	1- मन - - - (अ)	1- मन - - - (अ)
मान - - - (ब)	मान - - - (ब)	मान - - - (ब)
सह नहीं x	सह नहीं x	सह नहीं x
केल - - - (अ)	2- केल - - - (अ)	2- केल - - - (अ)
केल - - - (ब)	केल - - - (ब)	केल - - - (ब)
सह नहीं x	सह नहीं x	सह नहीं x
वान - - - (अ)	3- वान - - - (अ)	3- वान - - - (अ)
वान - - - (ब)	वान - - - (ब)	वान - - - (ब)
सह नहीं x	सह नहीं x	सह नहीं x
वाग - - - (अ)	4- वाग - - - (अ)	4- वाग - - - (अ)
वाघ - - - (ब)	वाघ - - - (ब)	वाघ - - - (ब)
सह नहीं x	सह नहीं x	सह नहीं x
वसु - - - (अ)	5- वसु - - - (अ)	5- वसु - - - (अ)
वसु - - - (ब)	वसु - - - (ब)	वसु - - - (ब)
सह नहीं x	सह नहीं x	सह नहीं x

WHILE STUDENTS ANSWER
IF SOLUTION IS READ
PUT CHECK NEXT TO
EXACT ANSWER.

CIRCLE STUDENTS ANSWER
WHEN SOLUTION IS READ
PUT CHECK NEXT TO COR-
RECT ANSWER.

CIRCLE
ANSWER

STUDENTS
WHEN SOLU-
TION IS
READ PUT
CHECK NEXT
TO CORRECT
ANSWER

Number right_____

Number right_____

Number
right_____

Number wrong_____

Number wrong_____

Number
wrong_____

Score(Right-Wrong)

Score(Right-Wrong)

Score
(Right-
Wrong)

(D)

Introduction to the Language Laboratory Programme
Questionnaire

Now that you have worked through this course, we would like to know what you think of the method: Please complete this questionnaire as fully and carefully, as you can.

Name _____ Age _____

Sex _____ School _____

Class _____ Date _____

1. Your Native Language _____

2. The number of years you have studied

1. Hindi _____ 2. English _____

3. Bengali _____ 3. Tamil _____

3. Which language you use normally

1. At Home _____

2. At School _____

4. In which language do you write letters _____

5. In which class you started studying

Hindi _____

Below are some of the things, which we want to know from you about this programme. Read carefully through each pair of statements (One under X and one under Y) and see which one is closer to your views. When you have made up your mind put a cross (X) between the statements in the column, which describes your views. Only one cross (X) is required between each pair of statements.

X	Agree with X	Inclined to agree with X	No preference for X or Y	Inclined to agree with Y	Agree with Y	Y
1. I dislike Hindi						1. I like Hindi
2. I find Hindi very easy						2. I find Hindi very difficult
3. I prefer language laboratory lessons						3. I prefer classroom lecture
4. I found this course of language teaching interesting						4. I found this course of language teaching boring
5. I think I could have learnt better in classroom						5. I think I learnt better in language laboratory
6. I found the language lessons less interesting than a normal classroom lecture						6. I found the language lessons more interesting than a normal classroom course
7. I would like to take another course of language learning by language laboratory						7. I would prefer not to take another course of language laboratory

(Contd.)

8. This course was difficult						8. This course was easy to do
9. The instruc- tions were useful in the programme						9. The instruc- tions in the programme were unnecessary
10. I would prefer to be taught by the langu- age laboratory course						10. I would prefer to be taught by teacher in classroom

(E)

Teacher's Attitude to Language Laboratory Questionnaire

Below are some statements. We want to know your opinion about these statements, regarding this method of teaching language through the use of language laboratory. Please read each pair of statement carefully (one under X and one under Y). Put a cross (X) between the statements in column, which describes your views.

X	Agree with X	Inclined to agree with X	No preference for X or Y	Inclined to agree with Y	Agree with Y	Y
1. Students can learn better in language laboratory than in classroom						1. Students cannot learn better in language laboratory, than in classroom
2. Students shall be more motivated to learn a language in language laboratory						2. Students shall not be motivated to learn a language in language laboratory
3. This method should be carried on in schools						3. This method need not be carried on in schools
4. Administratively this method is plausible						4. Administratively this method is not plausible
5. Economically, language laboratory is not possible to maintain						5. Economically, language laboratory is possible to maintain
6. The maintenance of such laboratory is possible in my school						6. The maintenance of such laboratory is not possible in my school

(Contd.)

7. I would prefer to teach my students myself					7. I would prefer my students to be taught by language laboratory
8. Do you think this method can save teacher's time and efforts					8. Do you think this method cannot save teacher's time and efforts
9. Students shall observe discipline in language laboratory					9. Students shall not observe discipline in language laboratory
10. Students learning by language laboratory shall care less for teachers					10. Students shall have usual regard for teachers

Please write your comments about language laboratory.

(11)

Rating sheet for students:

Teacher's Name _____, Date _____
School _____

Below are given the names of your school students (Class) written against a 5 point scale, viz; very good, good, average, poor, and very poor.

Please put a cross (X) against the name of each student in only one column, regarding his/her general ability in Hindi language.

S.No	Name	Very good	Good	Average	Poor	Very Poor
1.						
2.						
3.						
4.						
5.						
-.						
-.						
-.						
-.						
20.						

EXAMINATION ANXIETY TEST - JUNE 1994

Fill in the following:

Name _____, Age _____
 Sex _____, School _____
 Class _____, Medium _____
 Date _____

Below are some of the statements which other students have said about school examinations, they have taken. Read each statement carefully and think which one of the statements is close to your own feelings during examinations and class tests. When you have made up your mind, put a cross (X) in front of the alternative answer which describes your views.

1. Nervousness while taking an exam or test hinders me from doing well.
 - (a) Always
 - (b) Never
2. I work most effectively under pressure, as when the task is very important.
 - (a) always
 - (b) Never
- 3.

(Contd.)

3. In a course in which I have been doing poorly my fear of a bad grade cuts down my efficiency.
 - (a) always
 - (b) Never
4. When I am poorly prepared for an exam or test, I get upset and do less well than even my restricted knowledge should allow.
 - (a) This never happens to me.
 - (b) This always happens to me.
5. The more important the examination, the less well I seem to do.
 - (a) always
 - (b) never
6. While I may (or may not) be nervous before taking an exam, once I start, I seem to forget to be nervous.
 - (a) I always forget.
 - (b) I am always nervous during exam.
7. During exams or tests, I block on questions to which I know the answers, even though I might remember as soon as exam is over.
 - (a) This always happens to me.
 - (b) I never block on questions to which I know the answers.
8. Nervousness while taking a test helps me do better.
 - (a) It never helps.
 - (b) It often helps

(Contd.)

9. When I start a test nothing is able to distract me.
- (a) This is always true of me.
 - (b) This is not true of me.
10. In courses in which the total grade is based mainly on one exam, I seem to do better than other people.
- (a) always.
 - (b) never
11. I find that my mind goes blank at the beginning of an exam, and it takes me a few minutes before I can function.
- (a) I almost always blank out at first.
 - (b) I never blank out at first.
12. I look forward to exams.
- (a) always
 - (b) Never
13. I am so tired from worrying about an exam, that I find I almost don't care how well I do by the time I start the test.
- (a) I never feel this way.
 - (b) I almost always feel this way.
14. Time pressure on an exam causes me to do worse than the rest of the group under similar conditions.
- (a) Time pressure always seems to make me do worse on an exam than others do.
 - (b) Time pressure never seems to make me do worse on an exam than others do.

(Contd.)

15. Although "cramming" under pre-examination tension is not effective for most people, I find that if the need arises, I can learn material immediately before an exam, even under considerable pressure, and successfully retain it to use in the exam.
- (a) I am always able to use the "crammed" material successfully.
 - (b) I am never able to use the "crammed" material successfully.
16. I enjoy taking a difficult exam more than an easy one.
- (a) always
 - (b) Never
17. I find myself reading exam questions without understanding them, and I must go back over them so that they will make sense.
- (a) Never.
 - (b) almost always.
18. The more important the exam, the better I seem to do.
- (a) This is true of me.
 - (b) This is not true of me.
19. When I don't do well on a difficult item at the beginning of the exam, it tends to upset me, so that I block even on easy items later on.
- (a) This never happens to me.
 - (b) This always happens to me.

1

S C R I P T

OF

T A P E S

I

1- कृष्णरजाव्यास के लिए शब्दसूची

नगर,	नगर,	घरघ,	घनर,	कनस,
नमक,	पलक,	कन,	कल,	घन,
नल,	मन,	नगर,	नगर,	नमन,
नागर,	नामक,	पालक,	घागर,	घारघ, नमान,
ताला,	नाला,	नाना,	घारा,	गाना,
नाराम,	नामान,	नासार,	घामान	

2- शब्दास शब्दसूची द्वारा ध्वनियों के अभिज्ञान के लिए शब्दसूची

1-कन	-	कानः	2-	कल	-	पालः
3- पाल	-	पालः	4-	घन	-	घानः
5- घन	-	घनः	6-	कल	-	कालः
7- मन	-	मानः	8-	मान	-	मानः
9- कनस	-	कनासः	10-	पलक	-	पालकः
11- कल	-	कालः	12-	नमक	-	नामकः
13- घरल	-	घारलः	14-	नल	-	नालः

3- कृष्णरजाव्यास के लिए शब्दसूची की सूची

कन-कान, घन-घान, कल, काल, मन-मान, कनस-कनास,
पलक-पालक, कल-काल, नमक-नामक, घरघ-घारघ, नगर-नागर

4- शब्दसूची के रूपान्तरण शब्दास

1- कन ----- कान, घन -- घान, मन--मान,
पलक ---- पालक, कल----काल, घरघ-घारघ
नल ---- नाल, नमक --नामक, नगर--नागर
कान ----मान

पाठ-1(2)

1- कान --- कन, काल ---कल, मान---मक, पालक---पलक
काल ---कल, नामक ---नमक, घारघ---घरघ, नाल---नल
पालक----- पल, नागर---नगर

3- कल --- काल --- काला --- कला --- कल
पाल --- पाल --- पाला --- पला --- पल
नल --- नाल --- नाला --- नला --- नल
नर --- नार --- नारा --- नरा --- नर

२३

1- अनुस्वरवाच्यता के लिए अवधारणायें :-

मैल, मील, मैल, मेल, मेल, मेल, मेल, मेल
 मै, उनके, मेली, मेल, मेल, मेल
 मेल, मेल, मेल, मेल, मेल, मेल, मेल, मेल, मेल, मेल
 मै, मै, मेल, मेल, मेल

2- प्रमाण :

अनुस्वरवाच्यता के लिए अवधारणायें के लिए अवधारणायें

- (1) मैल - मैल, (2) मेल - मेल, (3) मेल - मेल,
 (4) मेल - मेल, (5) मेल - मेल, (6) मेल - मेल
 (7) मेल - मेल, (8) मेल - मेल, (9) मेल - मेल
 (10) मेल - मेल, (11) मेल - मेल, (12) मेल - मेल

3- अनुस्वरवाच्यता के लिए अवधारणायें की सूची:

मेल - मेल, मेल - मेल, मेल - मेल, मेल - मेल,
 मेल - मेल, मेल - मेल, मेल - मेल, मेल - मेल, मेल - मेल

4- अनुस्वरवाच्यता के लिए अवधारणायें

- 1- मेल - मेल, मेल - मेल, मेल - मेल, मेल - मेल,
 2- मेल - मेल, मेल - मेल, मेल - मेल, मेल - मेल
 मेल - मेल, मेल - मेल, मेल - मेल, मेल - मेल,
 मेल - मेल, मेल - मेल, मेल - मेल

जी जी

१- अनुस्वरानुसार है निम्न शब्दसूची :

ने , नीरा , नीर , नीरा , नीरा , नीरा , नीरा ,
पुष्परा , नीरा , नी , नीरा , नीरा

नीरा , नीरा , नीरा , नीरा , नीरा , नीरा ,
नी , नी , नी , नीरा , नीरा , नीरा

२- अनुस्वर :

शब्दसूची द्वारा नीरा नीरा के अनुस्वर है निम्न

शब्द सूची :

नीरा - नीरा , नीरा - नीरा , नीरा - नीरा ,
नीरा - नीरा , नीरा - नीरा , नीरा - नीरा ,
नीरा - नीरा , नीरा - नीरा , नी - नी ,
नी - नी , नी - नी , नी - नी ,

३- अनुस्वरानुसार है निम्न शब्दसूची के शब्द :

नीरा - नीरा , नीरा - नीरा , नीरा - नीरा ,
नीरा - नीरा , नीरा - नीरा ,
नीरा - नीरा , नी - नी ,
नी - नी ,

४- शब्दसूची के अनुस्वरानुसार शब्द :

- १) नीरा - नीरा , नीरा - नीरा , नीरा - नीरा ,
- २) नीरा - नीरा , नीरा - नीरा , नीरा - नीरा
- ३) नी - नी , नी - नी ,
- ४) नी - नी ,
- ५) नीरा - नीरा , नीरा - नीरा , नीरा - नीरा ,
नीरा - नीरा , नीरा - नीरा , नीरा - नीरा ,
नी - नी , नी - नी , नी - नी ,

उच्चारण पाठ-६

सू

१. अनुकरण अभ्यास के लिए शब्दसूची :

बोझा, उझाड़, पूझा, कूझा, झझ, झझप,
झाझा, झिझरा, झिझाना, पूझ, झझ, रीझ ।

नीठा, मिठाई, छा, ठाकुर, ठाठ, ठेका, ठोक
साठ, माँठ, पैठ, पीठ, रुठ ।

२. अभ्यास :

शब्दयुग्मों द्वारा अभिव्यक्तियों के अभिज्ञान के लिए शब्दसूची :

(१) चुप-कुप, (२) चुना-कुना, (३) कूठा-कुना, (४) चोर-होर
(५) झूठा-झूठ, (६) चुपना-चुपना (७) बेचना-बेचना (८) बिछाना-बिछाना
(९) चोर-होर, (१०) होर-होर ।

(१) झोक-टोक (२) मिठाई-मिठाई (३) टाकुर-ठाकुर (४) छाना-छाना,
(५) टाट-ठाठ (६) माँठ-माँठ (७) पैठ-पाँठ (८) पीठ-पीठ
(९) रुठ-रुठ

३. अनुकरण अभ्यास के लिए शब्दयुग्मों की सूची :

चुप-कुप, चुना-कुना, चुपना-कुपना, चोर-होर, कूना-कूना ।

मिठाई-मिठाई, टोकरा-ठोकरा, टाट-ठाठ, पीठ-पीठ

४. शब्दयुग्मों के आन्तरिक अभ्यास :

१. कुना-कुना, कुप-कुप, होर-होर, कूना-कूना, चोटा-चोटो
ठोकरा-ठोकरा, ठाठ-टाट, पीठ-पीठ, मिठाई-मिठाई चोटा-चोटा ।

२. चुना-कुना, चुप-कुप, चोर-होर, कूना-कूना, चोटो-चोटो
टोकरा-ठोकरा, टाट-ठाठ, पीठ-पीठ, मिठाई-मिठाई, चोटा-चोटा ।

ध व

अनुकरभाष्यास के लिए शब्द युग्म :

अवन,	अवान,	अपीर,	रहु,	आव,	मैव,
वाव,	वर,	वना,	री,		
अवन,	उवार,	मनु,	पीप,	वरती,	युव,
वीना,	वीमा,	दुव,	आव,		अवराव,
अवी,	लाव,	वीवा,	वावी,	मीवी,	मीव,
वरा,	वारी,	वीमना,	लाव		मूल,

अभ्यास :

शब्दयुग्मों द्वारा स्तंभियों के अभिधान के लिए शब्दयुग्म :

- (1) विरना, निरना, (2) विना - वैरना, (3) वाना - गाना,
 (4) वर, - वर (5) वा - वर, (6) वान - वान,
 (7) विन - विन, (8) मीवी - मीवी, (9) वाव - वान

(10) वाव - वान,

- (1) वान - वान, (2) वाव - वान, (3) वैकता - वैकता,
 (4) वावी - वावी (5) वीवर - वीवर, (6) वान - वान,
 (7) अवन - अवन, (8) वावा - वावा, (9) मीवी - मीवी,
 (10) वावा - वावा,

- (1) वाना - वाना, (2) वावा - वावा, (3) वाव - वाव
 (4) वाव - वाव, (5) वीव - वीव, (6) वर - वर,
 (7) वावारी - वावारी

जुकरणा-व्यास के लिए सज्जयुग्मों की सूची :

पिर-गिर, घाना-गाना, घर-गर, घान-गान,
बाग-बाग, घिन-गिन

घाम-घाम, वैकता-वैकता, घानी-घानी, साधा-साधा, घान-घान, घापी-घापी ।

-कता, घालू-घालू, घीत-घीत, घाला-घाला ।

जुकरणा-व्यास के स्यान्तारण के व्यास :

१) घर---घर, घान---घान, गिन-----गिन,
गिर---गिर, गाना---गाना, घान---घान ।

घाम---घाम, वैकता---वैकता, घानी---घानी ।

साधा---साधा, घान---घान, घापी---घापी ।

कता---कता, घालू---घालू, घीत---घीत ।

घाला---घाला ।

२) घाम---घान, घर---गर, घिन---गिन,

गिर---गिर, घाना---गाना, घाघ---घान ।

घाम---घाम, वैकता---वैकता, घानी---घानी,

साधा---साधा, घान---घान, घापी---घापी ।

कता---कता, घालू---घालू, घीत---घीत,

कता घाला---घाला ।

१- अनुकरण-व्यास के लिए शब्द सूची :

रोकना, झुकना, सोकना, काहू, कगड़ा, काष्ठा,
बैठक, बैठक, डपली, डेर, डोल, डाक, डाल, डौर

२. अभ्यास :

शब्दसूची द्वारा अभियाँ के अभिज्ञान के लिए शब्दसूची

- | | | |
|-----------------|---------------|---------|
| १. जाला-काछा | २- कैल-कैल | ३- काछा |
| ४- झुटा-झुटा | ५- सोकना-सोका | ६- जाहू |
| ७- कगड़ा-कगड़ा, | ८- बाम-बाँव , | |
| ९- डेरी-डेरी | १०- डाक-डाक | |
| ११- डोल-डोल | १२- डोल-डोल | |
| १३- डौर -डौर | १४- डौर- डौर | |
| १५- डाल- डाल, | १६- डाल- डाल | |
| १७. बैठक- बैठक | १८. बैठक-बैठक | |

३- अनुकरण-व्यास के लिए शब्दसूची के सूची ?

जाला-काछा, कैल-कैल, जाग-जाग, झुटा-झुटा,
डेरी-डेरी, डाक-डाक, डोल-डोल,
डाल-डाल, डौर-डौर

४- शब्दसूची के आन्तरिक अभ्यास :

- | | |
|---------------|-------------|
| १- जाला-काछा, | कैल-कैल |
| जाग-जाग, | झुटा-झुटा । |

उच्चारण पाठ ११(२)

ढेरो-ढेरी, डाक-डाक,
ढोल-ढोल डाल-डाल

२- काला-जाला कैल-जैल
माग-भाग मूठा-भूठा,
ढेरी-ढेरी डाक-डाक,
ढोल-ढोल डाल-डाल ।
ढीर-ढीर